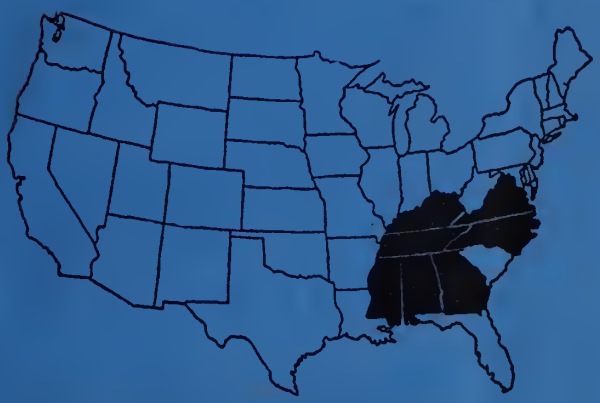
METHODS FOR ESTIMATING INCOME PAYMENTS IN COUNTIES

A Technical Supplement to

COUNTY INCOME ESTIMATES FOR SEVEN SOUTHEASTERN STATES

By

Lewis C. Copeland



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COUNTY INCOME ESTIMATES FOR SEVEN SOUTHEASTERN STATES

Prepared by the Technical Committee

for the use of the

Conference on the Measurement

of County Income

By

Lewis C. Copeland

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THE CONFERENCE ON THE MEASUREMENT OF COUNTY INCOME

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Acknowledgments

The Technical Committee gratefully acknowledges the assistance of the members of the Steering Committee and the staffs of the Bureaus of Business Research. In a very real sense they all participated in the work of the Technical Committee. Their criticism of the Committee's work was constructive, and their improvement on procedures has been encouraging. We are especially indebted to the following: Herman H. Chapman and Marion Hawley, Alabama; Byron L. Johnson, Denver; Will T. Hicks, Joe M. Buettel, Jr., and Jeff Cobb, Georgia; James W. Martin, John Johnson, and Madelyn Lockhart, Kentucky; Hubert H. Baughn, Louisiana; David McKinney, Mississippi; Rex S. Winslow, Lowell D. Ashby, Everett P. Truex and Walter Allen Spivey, North Carolina; Charles P. White and Ormond C. Corry, Tennessee; Lorin A. Thompson and Bonnie Green Loflin, Virginia; Stefan H. Robock, W. K. McPherson, Genevieve S. Kramer, and Ernest C. Harvey, Tennessee Valley Authority; Charles F. Schwartz and Robert E. Graham, Jr., and to the Office of Business Economics, United States Department of Commerce, for making their time available for consultation; and LaVerne Kunz, Research Department of the Federal Reserve Bank of St. Louis. Special mention should also be made of the generosity of the St. Louis Bank in making available to the Conference the services of Dr. Hochwald.

Preface

Early in the work of the Conference on the Measurement of County Income the Steering Committee requested the Technical Committee to draw up a tentative outline of procedures that would serve as a point of departure for the research and for experimenting with the available county data. The Technical Committee prepared a working draft of county data and suggested procedures for using them. This was submitted to the conferees as a check list of alternative sources and procedures, and as a starting point in recording their research experience. Through the months of collaboration the research staffs and the committee have constantly revised the outline in the light of their experience.

Alternative sources and steps were noted in order to bring to the attention of the researchers whatever procedures appeared to be fruitful lines of investigation. The results of this experimentation are reproduced here for limited circulation among interested research personnel. It is not intended to serve as a manual of instruction but to stimulate discussion and the exchange of ideas and to promote experimentation among persons interested in income research in small areas.

Only a few general limitations of the data and methods are indicated in the outline notes of Part II. It is taken for granted that researchers will familiarize themselves with the characteristics and limitations of the county data, and with the specific data problems of their state. A more explicit treatment of the assumptions underlying the procedures would of course be desirable. If these assumptions can be brought into clearer focus in the future, they will be more subject to checking and verification.

CONTENTS

INTRODUCTION. THE CONFERENCE ON THE MEASUREMENT OF COUNTY INCOME viii

Finance and Support of Conference Activities viii
Aims of the Conference ix
Experience of the Conference in Group Research x

PART I. PROBLEMS OF CONCEPTS AND TECHNICAL PROCEDURES IN THE ESTIMATION OF COUNTY INCOME 1

Concepts of Income 1
Income in Small Areas 3
Deriving County Estimates from State Totals 4
Basic Problem of Source Material 6
Payrolls in Industries Covered by Social Security 7
Payrolls from Noncovered Industries and Sources 9
Use of Detailed Statistics for Counties 10
Adjustments for Seasonal Variations 11
Use of OASI Data to Supplement UC Statistics 11
County Classification 12
Special Cases of Large Firms and Counties 12
Use of County Weights 13
Adjustments for Establishment Data or the Situs Problem 14
Need for Acquaintance with Economic Geography of State 16
Problems for Further Research 17
Sources of Income not Adequately Measured 17
Types of Payments not Adequately Differentiated 18
Use of State Economic Areas 18
The Relation of Income and Other Economic Factors 18
Application of Other Methods of Estimation 18
Distribution of Income by Size Groups 18
Development of Income Flow Data 18

PART II. SOURCES AND PROCEDURES FOR ALLOCATING STATE INCOME PAYMENTS TO COUNTIES 20

Wages and Salaries 21

1. Agriculture, Forestry and Fisheries 22
2. Mining 25
3. Manufacturing 26
4. Contract Construction 29
5. Transportation, Communication, and Public Utilities 30
6. Wholesale and Retail Trade 34
7. Finance, Insurance, and Real Estate 36

8. Service 37
9. Government 42
10. Miscellaneous Salaries and Wages 46
11. Payroll Deductions for Social Security Insurance 47
12. Net Salaries and Wages 47

Proprietors' Income: Farm 48

1. Farm Proprietors' Income 48

Proprietors' Income: Nonfarm 59

2. Proprietors' Income in Mining 62
3. Proprietors' Income in Manufacturing 63
4. Proprietors' Income in Contract Construction 64
5. Proprietors' Income in Transportation, Communication, and Public Utilities 65
6. Proprietors' Income in Wholesale and Retail Trade 66
7. Proprietors' Income in Finance, Insurance and Real Estate 67
8. Proprietors' and Professional Income in Service 68

Property Income 71

1. Rents 71
2. Dividends and Interest 73

Other Income 77

1. Public Assistance Payments 77
2. Old-Age and Survivors Insurance Benefits 78
3. State Unemployment Insurance Benefits 78
4. Pensions and Compensation Payments Related to Railroad Payrolls 79
5. Industrial Pensions 79
6. Workmen's Compensation 79
7. Pension Payments Related to Government Payrolls 79
8. Military Retirement 80
9. Adjusted Service Bonds 80
10. Veterans' Pensions and Compensation 80
11. Veterans' Payments Made through State Offices, 1947, 1949-50 80
12. Payments Related to Veteran Population, 1947, 1949-50 81
13. AAA Crop Inspection, 1939 81

PART III. APPENDIX: PAPERS ON SPECIAL PROBLEMS 82

A. Previous Studies of County Income 82
B. Interstate Situs Adjustment in Kentucky 92
C. Mining Wages and Salaries in Tennessee 96
D. Construction Wages and Salaries in Kentucky 104

INTRODUCTION

THE CONFERENCE ON THE MEASUREMENT OF COUNTY INCOME

The Conference on the Measurement of County Income grew out of a meeting held at the University of Kentucky in June, 1949, to explore the need and possibilities for a study of income in the counties of seven southeastern states. At this meeting representatives from the bureaus of business research, or their counterpart, from the Universities of Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia, and the Tennessee Valley Authority agreed to cooperate in a joint study extending over a period of two and a half years. Research staffs at the Universities of Louisiana, Arkansas, Denver, Duke, Florida and Kansas have also participated in discussions of the research at various stages.

To facilitate the cooperative arrangement, the participants signed implementing contracts and set up committees to guide conference policies. The working organization of the conference was placed in the hands of a Steering Committee, composed of one representative from each participating institution, an Executive Committee, and a Technical Committee. The last was given the job of formulating methods and assisting the bureau or departmental staffs in solving special problems relating to data and techniques. This committee has been a means for accumulating information on sources and procedures, and it provided a channel for discussing and distributing this information among the bureaus.

Finance and Support of Conference Activities

The project has been financed primarily by the individual universities and the Tennessee Valley Authority acting cooperatively. Several other agencies made significant contributions toward the project by providing technical assistance and by bearing the cost of special unpublished tabulations of statistics. The Federal Reserve Bank of St. Louis and Washington University made available the technical assistance of Werner Hochwald. The Office of Business Economics of the Department of Commerce provided the services of Charles F. Schwartz and Robert E. Graham, Jr., for several technical consultations. The office also made available unpublished detail on state estimates of income. The Bureau of Old-Age and Survivors Insurance cooperated by allowing the conference to use, within legal limitations of the disclosure rules, special county tabulations. The Government's Division of the Bureau of the Census, the Civil Service Commission, and the Office of Education were also generous in giving technical advice and detailed statistics. The Kentucky Department of Revenue made an indirect financial contribution by its support of an analysis of state income tax data. The state unemployment compensation commissions, departments of public welfare, finance, education, and

other departments and agencies in the various states made special tabulations available to the respective bureaus. The contributions of other agencies of the federal and state governments and of private business were substantial but too numerous to mention.

Aims of the Conference

The primary aims of the conference were directed toward developing a standard methodology and procedure for estimating county income. Other purposes were to prepare county estimates for whatever use they might have, but which, in preparation, would also serve as a testing ground for data and procedures.

In pursuance of the primary aims, the members of the conference have developed methods for making estimates of some eighty components of income received by individuals in each county. These methods were used for allocating separately to counties the United States Department of Commerce state estimates of each component of income payments to individuals. In so far as possible the allocators used were based on the available data most closely related to the separate components of income payments. The detailed breakdown enabled the university staffs (a) to adopt the specific procedures that gave the most appropriate estimates of each component of income, (b) to disclose discrepancies in the basic data by the use of alternative procedures, and (c) to identify and assemble primary data needed to improve estimates of income in small geographic areas.

In its decision to base the county estimates on the state estimates previously prepared by the Department of Commerce, the conference was influenced both by the availability of data and by the usefulness of the county estimates. The Department of Commerce estimates are currently the most complete and consistent state series on income that can be related to other series of available state and county data. In the first stage of research at least, the allocation of an established state series to counties made the closest possible first approximation to full coverage of the various income sources. The basis also gave a greater degree of uniformity to the estimates for different states and different years.[1]

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1. In view of the current progress of the National Income Division toward revising the state series to conform with the new national personal income estimates, the work of the conference has been organized in such a manner that it will be possible to revise the figures for income payments in counties to conform with the revised series.

The publication of the estimates for 1939 and 1947 partly fulfills the secondary aims of the conference.[1] Estimates for 1948-50 are now in preparation by some of the research staffs. Improvements are being made in the procedures, new series of county data are being used, and alternate estimating procedures are being developed and applied. Consideration is also being given to research into the distribution of income by size, the relation of income to employment, migration, and other economic factors, and into additional features of the economic structure of local areas.[2]

Experience of the Conference in Group Research

The experience of this group of research staffs in conducting a joint project may be of interest in itself to other research staffs. The cooperative efforts during the two years demonstrated that one cannot overemphasize the importance of a structurally effective organization in developing such a multiple-state research project. Much of the early work of the conference was concerned with these problems of organization. The members recognized the need for both administrative and technical committees to coordinate the joint activities of the various universities.

From the first, there was need for technicians to set up initial procedures, review experiments, and contribute to the initiation and conduct of statistical activity in each workshop. The conferees found that central technical advice contributed to a uniform approach, to saving time and resources, to the growth of a critical attitude, to the provision for automatic checking of work sheets, and to cooperative study of the more difficult problems of income estimation.

The coordination of a project simultaneously under way in seven states also involved other problems which would not be confronted if the research were being done in only one university. The differences in staff, equipment, previous experience, travel opportunities, distance from central sources of data, variations in available data, and state and local agency cooperation in

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1. See John L. Lancaster, ed., County Income Estimates for Seven Southeastern States (Charlottesville, Virginia: Bureau of Population and Economic Research, 1952); W. Allen Spivey, "Income Payments to Individuals in North Carolina Counties, 1939 and 1947," Unpublished M.A. thesis, University of North Carolina, 1951; Lowell D. Ashby and Everett P. Truex, "Experimental Analysis of Income Payments to Individuals in North Carolina Counties for 1939 and 1947," in preparation; Ashby and Truex, The Estimation of Income Payments to Individuals in North Carolina Counties: A Report of Analytical Progress, 1952; and Ormond C. Corry, "Study Shows Income by Counties in Tennessee," The University of Tennessee News Letter, December, 1951.

2. For example, there is in progress a study of the size distribution of income in Kentucky counties by the Kentucky Department of Revenue and the Bureau of Business Research.

the various bureaus are considerations in maintaining a uniform plan of study or a rigid time schedule. The schedule was flexible to accommodate the peculiarities in each shop. At the same time, there was coordination of the activities of the several staffs for the sake of cooperation in handling special problems.

Considerable duplication of effort was avoided by allocating each of the more difficult special problems to a particular bureau which could conduct experimentation with various possible methods. The findings were then reported to each staff for further experimentation. For example, the interstate situs problem appeared to be more acute in Kentucky than elsewhere; the Kentucky bureau, therefore, gave special study to this problem, and the results were circulated among cooperating universities. The intra-state situs problem was found to be particularly urgent in Virginia - partly because of the economy, partly because of the unusual local government structure. Consequently, the Virginia bureau gave attention to this problem, both for its own estimates and to aid other shops. Two bureaus worked on special problems in estimating payrolls in mining to take advantage of the variety of data available. Other illustrations of special problem assignments include construction wages and salaries, income from federal government sources, interest and dividends, and farm income.

The advantages of conducting this type of research on a cooperative regional basis include the possibility of joint action in securing special tabulations. This gain is especially significant when unpublished data from a central agency are the primary sources of statistics on the distribution of a component of income. Furthermore, the usefulness of the final estimates of county income is enhanced when intraregional comparisons can be made directly.

There was another considerable advantage in sharing the use of specialized personnel. The resources of most research bureaus do not permit duplication of highly trained technicians. The conference set-up provided a medium for the circulation of special talents. Bureau directors and staff members made themselves available for consultations in their workshops and for visits to other bureaus. Likewise, the magnitude of the project made it worthy of attention from agencies and specialized staffs both within the region and in other states. Regional centralization also made it possible to spread the use of technical consultations with the Department of Commerce staff members.

The conferees have found that the availability of data for measuring income by counties frequently depends on cooperation with government and private agencies. Much of the conventional data, such as census and social security statistics, need to be supplemented with localized state, county, and city data which can be found only if one makes a close survey of sources in the local government and business agencies. Some valuable data can be obtained if access can be had to the original machine tabulation sheets which are

usually the source of data in state and local publications. Much helpful information, never published and rarely referred to, can be found in the files of state agencies. Conference experience showed that a comprehensive county income study will canvass these obscure sources and will establish contacts with these agencies early in the process of gathering income data.

PART I

PROBLEMS OF CONCEPTS AND TECHNICAL PROCEDURES IN THE ESTIMATION OF COUNTY INCOME[1]

Concepts of Income

For years economic analysts have referred to income as a measure of economic welfare. However, only recently have sufficiently accurate measures of national income been devised to make income analysis useful. Because of the character of the basic statistics available, it was most practical to prepare estimates first for the nation as a whole. Within the last twenty-five years, businessmen, public administrators, legislators, social scientists, and statesmen have recognized the value of national income estimates and now rely heavily on them in making studies and in formulating policy.

Shortly after reliable national income estimates became available, the need for estimates of income in subregions became apparent. Methods of allocating the nation's income among the forty-eight states were devised to meet research, business and public policy requirements. These methods from time to time undergo major revisions and refinements. Perhaps in income analysis the most urgent need at present is for estimates of the income of people living in areas smaller than states.

Businessmen and public administrators particularly have felt the need for county income data. The former group can employ such data, among other uses, to locate investment opportunities and to estimate volume of sales. The latter group, especially state and local officials, can use similar information to estimate the taxpaying ability of the people; to allocate monies for health, education, roads, etc.; and to aid in the formulation of over-all resources policy and in the identification of local economic problems. In addition, the people of each county, themselves, have many uses for income estimates.

Broadly speaking, national income is the net return on the economic activities of individuals, firms, and institutions of the nation. The flow of income can be gauged at several stages in the economic process, and its geographic distribution can be measured. However, the manner in which income is treated will vary according to the stage or the area where the measurement takes place. Likewise, the data available for analysis will differ, and the analyst will encounter different problems on the national, state, and county level.

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1. This discussion and the outline in Part II are the outgrowth of extensive experimentation among the participants in the Conference for the Measurement of County Income and others who acted as advisors and consultants. Their contributions are given anonymously; however, this discussion does not necessarily represent the unanimous consensus of the committee members, the conferees, or the consultants.

Theoretically, it is possible to prepare estimates of income in geographic areas that will measure the production or flow of income in at least three stages; namely (a) the net value of goods and services produced, (b) income payments to individuals or personal income, and (c) the expenditure of income. Each of these estimates would vary because of the inclusion or exclusion of certain income components.

The net value of goods and services produced is national income as it is defined by the Brookings Institution in America's Capacity to Consume. There is a difference between this definition and that used by the National Income Division of the United States Department of Commerce. The National Income Division defines national income as "the aggregate earnings of labor and property which arise from the current production of goods and services" by residents of the country. The Brookings Institution, and others who use the same procedure, attribute national income to the nation where the productive process takes place; the Department of Commerce attributes national income to the residence of the owners of factors of production.

In the most current literature, the Department of Commerce concept is followed, and national income is conceived as all payments received by the residents of the nation for wages, rent, interest, and profits, whether or not they are citizens and regardless of where the income originates. In the analysis of income in small areas this possible difference between residence of owners and location of productive plant raises a conceptual problem as well as many statistical problems in the measurement of the flow of the monetary items. The accounting system that prevails in most business concerns records the transactions at the place where the business is carried on. When the income is dispersed from this point, it is difficult to trace it to the place of residence of the recipient. Even though it is not always possible to take account of the residence of the recipients, there are many uses for studies of the amount of income derived from the economic activities located in an area.

A clear distinction must be made between national income, that is, the value of goods and services produced, and income payments to individuals. The latter may be defined as earnings that accrue to individuals from wages, income from unincorporated enterprises, net interest and dividends, plus government and business transfer payments. But income payments do not include earnings of an individual which he does not currently receive, such as social security deductions, but they do include transfer payments (pensions, workmen's compensation, etc.), which are not currently earned. In an analysis of income payments to individuals, income is attributed to the area in which the recipient resides.

In order to measure the amount of money available to individuals for their personal expenditures or their savings, it is necessary to deduct the amount paid for taxes. The amount available after personal taxes is designated

as disposable income. In order to follow the flow of income one step further and to analyze the uses to which it is put, estimates of personal expenditures and savings could be prepared. These analyses in the past have been restricted largely to the national level and to typological studies of family income; however, they would be quite useful if available for small areas.

Laymen and market analysts are more interested in income paid out and especially income received by people in specific areas.[1] At this stage in measuring the distribution of money compensation for economic activities, one must take account of payrolls from each industry group and the net returns to individual proprietors of farms and business enterprises. In addition to these payments for services currently rendered, we must measure the rent, dividend and interest earnings of investors from the use of property accumulated in the past. Pensions, social security payments, military allotments, and other transfer payments to individuals must also be included. These transfer payments form a large segment of the income of individuals but do not enter into national income.

Income in Small Areas

The need for information on income in small areas has led to several attempts to develop a basis for measuring the economic status of counties, for estimating the income received, and for allocating to counties a portion of the estimated income in each state. In earlier years postal receipts, newspaper circulation, the number of income tax returns, bank deposits, the assessed valuation of property, and rental data were used as indicators of economic status. More recently, county income has been estimated on the basis of such factors as retail sales and income reported for tax purposes. It is obvious that although these varied statistics measure different types or aspects of economic activity, they do not cover the whole gamut of income payments to individuals, nor do they give proper weight to the income components.[2]

During the last few years a considerable volume of new data has become available for use in estimating county income. For example, the reports of employers to the social security programs, especially the federal old age and survivors insurance and the state unemployment compensation programs, provide statistics on the amount and industrial sources of most wages and salaries by counties. The Census of Agriculture and the crop

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1. For purposes of local analysis and for a better understanding of regional interrelationships, it might be of greater analytical importance to know more about income flows through an area, rather than income payments during a given period in the area.

2. A list of previous studies of income in small areas is given in Appendix A.

reporting services cover many aspects of farm income. Some of the payments by government agencies are also recorded by counties.

Still, however, the researcher dealing with economic analyses of small areas is confronted with a variety of statistics without a common denominator. To make the most of these statistics, a method is needed for deriving from a welter of county data a set of measures for different sectors of the economy that can be summed up or treated in common terms. There is a need for a systematic conceptual framework within which the economic indicators can be pooled and given weights in proportion to their actual appearance in the counties which, at the same time, will give comparable results among states and reflect changes through the years.

One solution to this problem of making the fullest use of heterogeneous data is to reduce the various economic indicators to measures of income. Just as monetary aggregates frequently provide the basis for equating a variety of items to an index of volume, so the income structure provides a common basis for measuring the combined net results of different economic activities.[1]

Deriving County Estimates from State Totals

There are two possible approaches in preparing estimates of income in counties.[2] First, the estimator might build up the aggregate income in each county on the basis of information gathered from the population or from state and local records.[3] This approach is quite useful in small limited areas or in specific industry studies. At present, however, adequate statistics are

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1. This assumes that the measurement takes place in areas with a common industrial structure or that such items as imputed rents, nonmoney income, and personal services are equated to monetary terms. There are considerable problems, however, in reducing the different forms of income of workers in different types of economies, such as farm and nonfarm, to a common basis.

2. The present interest is in the amount of income individuals receive from various sources. Other methods would be used for estimating the payments received by specific population groups, such as farm and nonfarm persons, and for estimating the distribution of recipients by income levels. In respect to the latter, see Lewis C. Copeland, "Working Papers on a Method for Estimating Family Income Levels in Small Areas" (Knoxville, Tennessee, 1946), and the Virginia and Kentucky studies cited in Appendix A.

3. A procedure for compiling such data from federal and state income tax records was developed by Lorin A. Thompson in "Income Payments by Cities and Counties of Virginia, 1947 and 1945," and "Patterns of Income Payments by Areas;" see also Sara K. Gilliam, Distribution of Income in Virginia in 1947, (Bureau of Population and Economic Research, University of Virginia).

not readily available on all sources of income for building up a complete coverage of all sources by counties. The income tax coverage, for example, is quite incomplete, and the form in which the income items are reported is rather inflexible for research purposes.

An alternative procedure is to begin with a previously prepared estimate of payments from various sources in the state as a whole and then to apportion the payments from each source to the counties on the basis of geographic indicators.[1] All of the data available for the build-up approach would be used in this procedure. But since direct county data are not available on income from all sources, this procedure makes it possible to supplement income data with indirect indicators of income for determining the geographic distribution of payments.[2]

In view of the data that are available for estimating county income, it appears that the allocation approach is the most feasible or at least the most economical procedure at present for a first approximation of county income. The state estimates of income payments to individuals prepared by the United States Department of Commerce give a uniform basis for small area estimates.[3] Income payments to individuals are a measure of the income received

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1. At present most of the studies of county income are carried out within the concept and framework of the income payment series prepared by the Department of Commerce. This is not necessarily the most meaningful concept, but it is the one to which we can give most concrete significance with the limited data now available. The goal might be to develop data that will put the income payment concept in a broader conceptual framework for local and regional analysis. There are many possibilities for developing new data on the local level that will indicate various aspects of the income flow.

2. See, for example, Wendell M. Adamson, Income in Counties of Alabama, 1929 and 1935 (Bureau of Business Research, University of Alabama, 1939). Alternative procedures for the use of previously established state estimates were used by John L. Lancaster in "Per Capita Income of Virginia Counties for 1940," University of Virginia Newsletter, Oct. 1, 1945; and by Edna Safley in "An Index of County Per Capita Income for North Carolina" (M.A. thesis, University of North Carolina, 1949).

3. A summary and brief explanation of these estimates are published annually in the August number of the Survey of Current Business. For the purpose of county estimation, rather detailed estimates of payments from industrial and other sources, as listed in Part II, will be found quite useful. For a description of the series, see Milton Gilbert and Louis Paradiso, "National Income and Other Business Indicators," in Government Statistics for Business Use, ed. by Philip M. Hauser and William R. Leonard (New York: John Wiley & Sons, 1946), pp. 17-50.

from agriculture, industrial and business establishments, property, government agencies, and other sources. These payments comprise income received by individuals in the form of (1) wages and salaries by industry group, after deduction of employees' contributions to social security, railroad retirement, railroad unemployment insurance, and government retirement programs; (2) proprietors' income by industry group, representing the net income of unincorporated establishments including farms, before owners' withdrawals; (3) property income, consisting of dividends, interest, and net rents and royalties; and (4) other income, which includes public assistance and other direct relief; labor-income items such as work relief, government retirement payments, veterans' pensions and benefits, workmen's compensation, and social insurance benefits; mustering-out payments to discharged servicemen; family-allowance payments and voluntary allotments of pay to dependents of military personnel; enlisted men's cash terminal-leave payments and redemptions of terminal-leave bonds; and state government bonuses to veterans.

Basic Problem of Source Material

The basic problem in allocating the Department of Commerce state estimates to counties is to find or derive county data series that will reflect accurately the geographic distribution of each component in the state.[1] Series are needed with the proper percentage distributions, not necessarily series which directly measure or add up to the estimated state totals.[2]

The first and most complete source is the social security reports of employers to the Bureau of Old-Age and Survivors Insurance (BOASI) and to the state unemployment commissions (UC). These social security data are especially useful in allocating covered wages and salaries, but, as noted below, the machine tabulations require considerable hand work to correct

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1. The following may be cited as examples of the recent applications of the allocation approach: Robert H. Johnson, Analysis of Iowa Income Payments in Counties (Bureau of Business Research, Iowa State University, 1950); Carl G. Nordquist, "An Estimate of Income Payments to Persons, by Counties in Colorado" (M.A. thesis, University of Denver, 1950) and Byron L. Johnson and Carl G. Nordquist, An Estimate of Personal Income Payments by Colorado County, 1948 (University of Denver Studies in Social Sciences, 1951); and Werner Hochwald, "Eighth District Income and Expenditure, 1948" (Research Department, Federal Reserve Bank of St. Louis, 1950).

2. References to series of county data that have been found useful for allocating various components of income are given subsequently in Part II. The present summary discussion will serve to give an orientation to the use of these data and to present some general remarks on procedures.

gross errors in county and industry classification. They are available in published reports or in special tabulations giving numbers of reporting units, employment and wages paid, quarterly or annually, by counties and industries.

The second most accessible source is the federal census reports. County data from each census are usually applicable to specific income components and only for one year, but they also provide benchmarks for checking estimates for between-census years.

Finally, county distributions directly or indirectly related to income may be obtained or derived from a wide variety of other sources, such as agricultural, commercial, industrial, and financial statistics, special industry studies, state government reports, tax reports, and even lists of proprietors and firms in operation. County data from all these sources are needed in most states before the estimator can allocate with reasonable accuracy the whole gamut of state income components.[1]

Payrolls in Industries Covered by Social Security

Since the OASI program covers some thirty-five million workers (and beginning with 1951 will cover forty-five million) who receive half of all income paid out and some three-quarters of all wages and salaries, it is convenient to begin the estimation of county income with the payroll statistics compiled by the BOASI and to supplement these with UC statistics.[2]

The OASI statistics include the payrolls of most employees in private

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1. See, for example, the special papers in the Appendix.

2. A description and explanation of the OASI statistics including the industrial classification will be found in County Business Patterns, First Quarter 1948; Business Establishments, Employment and Taxable Payrolls, by Industry Group Under OASI (U.S. Dept. of Commerce, 1949); and similar reports for 1946 and 1947. Summary county totals were mimeographed for 1945. Tabulations have been prepared for the first quarter of 1946-48 giving taxable payrolls, employees and units, by county and industry. The published state bulletins contain summary county statistics for nine industry divisions. The 1949-50 tabulations will be limited to the manufacturing industries.

non-agricultural commercial and industrial establishments.[1] Major exclusions from coverage are: self-employment; casual employment not in the course of the employer's trade or business; employment of a member of the employer's family; employment in agriculture, with minor exceptions; domestic service in a private home; employment on a foreign vessel; employment by federal, state or local government; employment in certain types of nonprofit organizations; railroad employment; employment by a foreign government or its instrumentality; employment as a student nurse or interne. Employment in fishing from small boats and employment on ships at sea, while covered by the Social Security Act, are included in these tabulations only in the United States summary. The data are based on employers' tax reports under the OASI. Business establishments with one or more covered employees are included, while those with no covered employees in reporting period are excluded.

It is estimated that, in March 1948, employment covered by the OASI program comprised 75 per cent of total wage and salary employment (excluding self-employment, such as proprietors), as indicated in the following table derived from the Bureau of the Census current surveys of the population.

Employment Group	Per Cent
Total Wage and Salary Workers	100
Covered by OASI program	75
Agriculture, excluding proprietors	3
Domestic service	4
Government	12
Railroads, nonprofit institutions, and all other noncovered groups	6

While workers in agriculture, government agencies, domestic service, and proprietors and other own-account workers have not been covered in the past,

1. The OASI program includes employers of one or more workers in covered industries (See OASI industry classification for details of coverage); whereas, in most states the unemployment insurance program includes only employers of eight or more workers. See the series of annual reports, Employment and Wages of Workers Covered by State Unemployment Insurance Laws, 1939-1948 (U.S. Department of Labor, Bureau of Employment Security), for state statistics and explanations of the uses and limitations of the UC data. The state figures in these sources are invaluable for deriving detailed estimates for covered industries. In some states the UC county tabulations may be superior to the OASI tabulations for estimating county income because of fuller coverage, more adequate county classification, and annual tabulations.

some of these were brought into the program in 1951. As noted below, several adjustments must be made in the OASI statistics, especially for seasonal variation, so that they will correctly reflect the annual county distribution of payrolls from the respective industries. After these refinements are made, the previously estimated state total can be allocated to the counties in the same ratio as the OASI series.[1]

Payrolls from Noncovered Industries and Sources

The social security program does not cover payrolls in all industries and, of course, does not include all types of income paid individuals. Separate and piece-meal county distributions must be made for payrolls of employees in industries not covered by OASI, for the income of self-employed proprietors and professional workers, and for payments from property and other sources such as pensions, social security, and public assistance.[2]

The Census of Agriculture provides an obvious source on farm wages and farm proprietors' income. State agencies can furnish county tables for most of the social security and public assistance payments. The major problems arise in allocating the income of nonfarm proprietors and professional groups and in allocating dividends, interest, and rents. The number of proprietors in trade and service, as reported by the Census of Business, and the number of doctors, dentists, and lawyers may be the most direct data for the self-employed, unless special state or federal income tax data can be obtained. For some proprietory groups, such as manufactures, mining, and finance, county data are so scarce at present that it may be necessary to use some indirect series such as the number of firms in operation as county allocators.[3] The county series for each source of income needs to be studied to determine the coverage and to obtain the most direct and accurate geographic distribution. It may be helpful to compare several series of county data for some components.

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1. A more direct method is to multiply each county figure by the ratio between the Department of Commerce state estimate and the sum of the county series. A more detailed statement of problems and methods for application to 1939, 1947, and 1949-50 will be found in Part II.

2. A description of some of the problems involved will be found in Wendell M. Adamson, "Measurement of Income in Small Geographic Areas," Southern Economic Journal, Vol. VIII, April 1942, pp. 479-92.

3. For further discussion of proprietors' income, see second section of Part II.

Efforts should be made to obtain consistent estimates for covered and noncovered industries. In industries covered by the social security program it may be assumed that the county payrolls in each industry are correctly weighted if adjustments are made for small firms and for seasonal variations. However, for payrolls in noncovered industries and for other segments of income, a variety of direct and indirect data must be used, some of which are not consistent with the social security data. A general basic procedure is to obtain or derive consistent state totals and then to make the most accurate county distribution possible. If combined allocators are used for distributing lump sums, it will be necessary to give correct weights to the various components.

Use of Detailed Statistics for Counties

As the researcher who has used county data might expect, there are several deficiencies in the available statistics for estimating county income. The reporting and coverage of most series is rather restricted; the industrial classification is open to question; and the county classification leaves much to be desired. Furthermore, the fact that most of the data are compiled from reports of establishments gives rise to the situs problem. Since deficiencies in the basic data and the fact that only in a few cases do the totals for counties and state estimates match in content, it is impracticable to allocate the state estimates by grand totals on a mechanical basis.

Therefore, the estimates for counties should be made in the maximum industry detail possible, and should not be limited in scope to broad categories.[1] The preparation of detailed estimates on the county level has practical value in the estimation procedures even though the detail and small numbers may not be considered highly accurate or stable. As data are lumped, statistical controls are lost. Some gross errors in county and industry classification can be spotted and eliminated if the industry detail is sufficiently specific. This also facilitates adjustments directly in statistical series on the basis of data closely correlated with the primary series. Frequently, the most accurate county data are available only for specific industry groups. Detailed estimates are often necessary to fill in portions of industry divisions not covered by the social security data or census. Researchers should take account of all measurable items to assure the use of appropriate weights in each industry and in each county. Furthermore, if detailed estimates are made, any one of the separate

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1. The importance of this caution increases as the deficiencies in the data increase and as the size of the area decreases. It is quite important, for example, in industries for which large blocks of payrolls are reported statewide. If sufficiently detailed state estimates are not available, two alternatives are possible. The Department of Commerce state estimate can be divided between sub-groups for allocation to counties. UC, OASI, and Census statistics will be useful for this purpose. Another alternative is to build up a combined allocator in which an indicator for each source or type of payment is included and given an appropriate weight.

components can be compared, revised, or adjusted on the basis of more adequate data without affecting the estimate for other components.[1]

Adjustments for Seasonal Variations

The principal difficulty in the use of the OASI county statistics is that up to the present they are available only for the first quarter of certain years. Therefore, it is necessary to adjust the county statistics for seasonal variations.[2] Adjustments for seasonal variations can be made on the basis of UC data for the county and industry by using the ratio between the annual total and the first quarter payrolls.[3] This adjustment should, of course, be made for each industry by county.

Use of OASI Data to Supplement UC Statistics

In some states where the UC program covers employers of one or more persons and where annual tabulations are available, the UC statistics may be more satisfactory for estimating purposes. However, if these statistics are to be used as a basis for county estimates in states where the UC program covers only the larger firms, some correction should be made for the small firms not covered by the UC program.[4] The payrolls in small firms may be obtained from unpublished tabulations of OASI reports. Whenever two series are combined, however, caution must be used to avoid duplication.

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1. Some of the papers in the Appendix illustrate steps in rather detailed estimates. It is, of course, recognized that for some uses it may be practical to employ more generalized procedures. The amount of income involved is a factor to be considered when deciding on the schedule of time and effort to be spent in allocating any one component. Apportionment of the payrolls of chain stores, for example, may prove more significant because of magnitude than devoting the same amount of effort on some small component of income. However, where the small component to be allocated looms large in the total income of one or a few counties, some additional research may prove to be very fruitful.

2. The magnitude of the variation can be judged from UC quarterly data. In 1947, for example, the first quarter UC payrolls in the nation amounted to only 23 per cent rather than 25 per cent of the total for the year. In some industries, the difference may be much greater in small areas.

3. The procedure assumes an adequate county classification of both the UC and OASI statistics, and also it assumes that the first quarter and annual UC tabulations are consistent and were obtained from the same deck of cards.

4. In 1947 the minimum provision of eight or more, if uniformly applied by UC, would have excluded 78 per cent of all employer units covered by OASI in the United States and in some industries, such as service, the proportion

County Classification

In the social security tabulations, firms are not always classified by county, and between the two series, the county classification of firms is not always consistent. In the first place, large blocks of payrolls are not classified by county but are grouped in a statewide category. This presents a considerable difficulty in the use of the statistics, since it cannot be assumed that these unclassified payrolls are distributed among the counties in the same ratio as payrolls that are classified by county.[1]

In order to classify the maximum amount of payrolls by county, it is suggested that the UC and OASI series be tabulated for each county and compared. They may also be compared with other series showing the location of operating firms to spot omissions and errors in county classification. In some cases it will be possible to identify large employers in the statewide group and to locate them properly in one or several counties. Special lists of these firms may be obtained from UC. This step will also be of value in detecting and correcting some of the other inconsistencies in the classification of firms.[2] This same procedure can be applied to any series of county data.

Special Cases of Large Firms and Counties

In dealing with small areas the numbers are frequently rather small and are likely to be unstable. Therefore, the correct placement of large units is quite important. Researchers should take account of the payrolls of large firms, utilities, institutions, defense installations, and government agencies to be

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excluded would have been larger. The proportion of payrolls excluded would, of course, have been much smaller. The UC program covered 94 per cent of the nation's payrolls covered by OASI. Some seasonal industries are not covered by UC.

1. In some states the UC staff has reduced or eliminated the statewide group by obtaining detailed reports from employers as to the location of multi-unit operations.

2. The fact that some firms are not correctly classified by industry should also be noted. Perhaps the above procedure will assist in classifying some of these. Special problems also arise in filling in data withheld to avoid disclosure of individual firms, and in separating the data for individual counties that are grouped for tabulating reasons. Usually supplementary data from other sources can be used to distribute the aggregate for counties affected.

certain that they are accurately estimated and located.[1] Care should also be taken in estimating payrolls and other types of payments in large counties. Frequently special information is available for these areas. Wherever accurate data are obtainable on the amount of payments made in specific cities or counties, the amount in these places may be allocated first. Then a rough allocation can be made to the remaining units in the state on the basis of more indirect data.

Use of County Weights

In several cases it is necessary to resort to the number of recipients of payments for allocating income to counties. This is especially true in preparing payroll estimates for years before 1946 and for allocating the income of proprietor and professional groups. Here the researcher must resort to the number of employees or proprietors. A problem arises in the direct use of such statistics, however, due to the considerable geographic differences in average earnings. For various reasons, the incomes of people living in communities of different size vary almost directly with the size of community.[2] This leads to a wide variation among the average payments received in counties. For example, the average in the most rural counties may be only half the average in the most urban counties. The variation is apparent with few exceptions in all occupation and industry groups and for salaried and nonsalaried workers. It should be noted, too, that, with some exceptions, the variation is greater among professional and proprietor groups than among salaried and wage earners. Therefore, if the number of employees or other recipients of income payments is used as a basic allocator, it is necessary to weight the number of recipients for variations in average earnings.[3]

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1. Frequently, these large units do not keep records by location of employment or residence. The latter can sometimes be obtained from punch cards or by distributing to counties the W-2s, that is, the federal income tax withholding receipts.

2. See Maurice Leven, The Income Structure of the United States (Washington: Brookings Institution, 1938), pp. 45-46; 154-155; and Adamson, "Measurement of Income in Small Geographic Areas," op.cit., pp. 486-487.

3. For another use of county average earnings, see "Individual Incomes of Civilian Residents of California, by Counties: 1939-1946" (Research Department, California State Chamber of Commerce, 1946).

It is desirable, of course, that the weight used should be as specific as possible; that is, the weight should apply to the specific group or industry for which the estimate is being made. But this is seldom possible. Furthermore, the small numbers involved in counties will become still smaller if broken up into specific industries, and the average earnings of detailed groups are likely to be unstable. However, since there is a general correlation between the county average earnings in different industries, it appears that one might do well to sacrifice specific industry averages for stability in averages. Perhaps the most reliable procedure is to calculate a rather inclusive average based on a wide range of industry data. This average can be used as a weight in deriving a provisional distribution of county income, which in turn will be adjusted to the previously estimated state total.

Adjustments for Establishment Data or the Situs Problem

Many county statistics are compiled from reports of employers or establishments which cover all employees on the payroll regardless of the county or state in which the employees reside. Thus, the data reported in the censuses of business, minerals, and manufactures and the social security tabulations are collected from employers or establishments and are classified by the county in which the establishment or reporting unit is located. The fact that some of the persons on the payroll of the establishment may reside in another county often creates a situs problem that must be recognized.

It is necessary to allocate the payrolls to the counties in which the workers reside to stay strictly within the concept of income payments to people residing in defined geographic areas.[1] Although some workers commute across county boundary lines in practically every county, it is taken for granted that in general the counter movements will balance each other, and that, therefore, adjustments for the situs problem need not be made for every county. In cases of counties in which large establishments are located, and especially where these plants are near the borders of counties, some adjustment should be made for payments to workers who live outside the county.[2]

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1. A discussion of methods of dealing with some aspects of the situs problem appears in Appendix B.

2. The magnitude and variation of the problem is illustrated in a survey of commuting patterns conducted by the Indiana Employment Security Division in 1950. The employees of 1,164 manufacturing and nonmanufacturing employers were classified by county residence. On a statewide basis, 13 per cent of the employees of establishments surveyed reside outside of the county in which they are employed. Among 26 selected industrial counties the ratio of inter-county commuters ranged from 3 per cent in an agricultural trade center to more than one-third in three of the counties. Employers in 16 of the 26 selected counties reported that over 10 percent of their workers commute across county lines. In general, areas of high employment and

The researchers will need to take three steps in respect of the situs problem; namely, (1) determine the locality and the industry division or income component in connection with which the problem exists; (2) demark the area or group of counties within which the adjustment is to be made; and (3) set up appropriate statistical procedures for adjusting the basic data used as allocators or for making corrections in the estimates after they are derived.

The following are suggested bases for determining where the problem may be expected to occur in such proportions that adjustments should be made:

A. In the use of establishment data: The bias in statistics due to commutation of workers across county lines does not occur in statistics collected from enumeration of individuals at home. It may be expected to be inherent in all establishment data, and where data are classified by post office address. Wherever the business conducted by the establishments tends to be centralized or concentrated, such as in manufacturing, public utilities and banking, the situs problem is magnified.

B. In certain localities: The situs problem is most likely to occur in important proportions in the vicinity of large urban centers, and especially where large plants or cities are located close to state and county lines. Note the following cases:

1. In the vicinity of all important employment centers near county boundaries.

2. In the standard metropolitan areas having 40,000 or more manufacturing employees in 1947. Special census data are available for these counties.

3. In the vicinity of the principal industrial counties with 20,000 or more manufacturing employees in 1947.

4. In the vicinity of all other metropolitan centers; namely, cities with 50,000 or more population.

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the larger cities draw a proportionately larger number of workers from surrounding counties. In nearly all of the industrial areas in which a major city is located, the ratio of commuters was more than 10 per cent.

C. In large scale operations: In general, large plants and projects are more likely to draw workers from a distance and across county lines than small plants. For example, note all counties listed in the Census of Manufactures: 1947, Table 7, as having plants with 100 employees and over; also all counties with firms shown in the OASI tabulations with 500 or more employees.

D. In certain industries: The commutation of workers probably varies by industry. For example, it is not expected to be as great in agriculture as in manufacturing. Researchers might expect to find the situs problem in construction and manufacturing industries especially.

The problem of determining the limits of areas to be used in resolving the situs difficulty must be attacked by each state for each area and industry in terms of local knowledge. Highway traffic maps should be quite useful for demarking the specific areas of commutation.

One possible procedure for measuring the amount of commutation is the sample study approach. This may prove rather expensive if adjustments have to be made in several areas and for many segments of income. A sample survey may yield sufficient data to correct the estimates of border cities and counties. The Kentucky experience shows that, with the good cooperation to be expected of businessmen, the results of a limited sample can help to correct for interstate and intercounty income payments.[1]

Another procedure for dealing with the problem of intercounty movements, is to group counties to include the total commuting area of workers across county lines. This plan makes it possible to utilize such information as payroll data by establishments in making income estimates for areas within which intracounty payments may be neglected. The estimate for the group of counties may then be broken down to the county level on the basis of employment statistics or other available data. The investigator may make kindred attacks on other segments of income that involve a situs problem.

Need for Acquaintance with Economic Geography of State

The foregoing remarks are quite general. They and the outline of procedures which follows are intended to suggest ways of approaching the problems in the field and do not pretend to lay down fixed procedures that can be followed mechanically. Actually, there is at present no one complete series of county data for building up or distributing state totals by counties. The problem then is to complete the most accurate series, and in some cases to derive new series

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1. See Appendix B.

to represent the county distribution. Thus, the researcher must draw on all relevant data, adapt the procedures to what is available in the specific instance, and rely upon an informed judgment.

The researcher on income in small areas must, of course, know the county statistics bearing on a wide range of economic activities, and he should also have an acquaintance with the economic geography of his state. Some of the deficiencies in the county statistics available at present can be overcome by rather close study of the geographic distribution of the industries and economic activities in the state and by drawing upon nonstatistical sources. This emphasizes the need for group research in the field of income. The refinement of estimates for various components might be achieved through the collaboration of specialists in several fields. This sort of cooperative research should make it possible to improve the present data and to fill several of the gaps in the county statistics on income.

Problems for Further Research

From the perspective of the two-year study of county income, it appears that there is yet much to do in respect of data for small area economic research and the conceptual framework and methodology appropriate for such studies.

Sources of Income not Adequately Measured--In carrying out estimates of county income within the context of the state income payment series, there are several types of economic activities that might be overlooked or not adequately accounted for. While these may not bulk large on the state or national level, in small areas they may be major sources of income. The proportionate importance of activities in small areas must be measured in terms of the number of people involved. The following activities might merit more adequate treatment, especially in rural areas:

Agricultural services, especially cotton gins, fertilizer services and other farm machines for hire, contract packers, nurseries, and other such commercial farms.

Forestry and fishing.

Rural industries, such as small sawmills, operated by family labor. Many of these are not covered by the statistical sources.

Seasonal activities, such as tobacco stemming and cotton compresses.

Off-farm work of farm operators and members of farm families.

Income of professional and own-account workers.

Income of local government workers, especially fees and income in kind.

Types of Payments not Adequately Differentiated--In the present state series the income of some nonprofessional own-account workers is not adequately differentiated for treatment. There is need for considerable research on various forms of property income. Perhaps a more detailed breakdown of these would open up fruitful lines of investigation.

Use of State Economic Areas--Insofar as the researcher accepts the Bureau of the Census' measures of homogeniety among the counties grouped into economic areas, income analysis for these areas may be introduced as an intermediate step between state and county analysis. The area analysis would help in confining estimating errors to relatively small county groups and in overcoming the handicap of having to deal with small numbers for individual counties. For certain purposes, or for all except selected base years, the income analysis may be made only by areas. Once set up on this basis, the areas should prove to be more practical units for the purpose of small area studies than the large number of county units in the state.[1]

The Relation of Income and Other Economic Factors--The availability of income data for small areas makes possible further research into the relation of income to other economic factors. County variations in income levels and change could be correlated with the characteristics and changes of population, employment, migration, etc. The treatment of these series within the context of meaningful geographic units, such as the state economic areas, should add significance to the analysis.

Application of Other Methods of Estimation--It should be possible to apply more refined procedures of statistical analysis, such as regression methods, especially to specific components for which county data are lacking or deficient. For example, regression methods should be readily applicable to the study of property and agricultural income.

Distribution of Income by Size Groups--The income structure of an area has various facets, and one method or measurement cannot portray all of the dimensions of income. In addition to the amount of income received from various sources, there is need for information analyses on the distribution of persons and families by income levels.

Development of Income Flow Data--Other facets of income and expenditure could be portrayed by income flow data. The income estimates may be treated as only the first step in the measurement of this flow. This implies four steps

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1. See Donald Bogue, "Economic Areas as a Tool for Research and Planning," American Sociological Review, Vol. 15 (June 1950), pp. 409-16; and State Economic Areas, a Description of the Procedure Used in Making a Functional Grouping of the Counties in the United States (Washington, 1951).

which may be briefly outlined.

1. Income estimates can be supplemented by expenditure estimates. These expenditure estimates would imply estimates of consumption expenditures, of expenditures for saving and investment, as well as expenditures for governmental services. The latter would improve understanding of relative fiscal loads by local areas. All these expenditure estimates would also have to specify whether the expenditure is made in the same area where the income has been received, thus improving our understanding of income flows between areas.

2. Expenditures can be financed not only out of current income, but also out of past savings as well as out of credit. Thus, expenditure estimates necessitate an extension of our net income data toward a money flow analysis including the use of liquid assets and credit.

3. Beyond expenditures for consumption, data on expenditures for investment and the source of these expenditures are needed for the analysis of local economic problems. For business investment, new series have become available recently, such as the compilation of tax certificates issued for accelerated depreciation of defense facilities. A detailed analysis of these investment expenditures would appear to be a promising extension of income estimates and broaden understanding of relationships between investment and income by local areas.

4. Finally, there is a possibility of developing estimates, not only of money flows, but of commodity flows between areas. Such work would have, incidentally, importance for understanding the economic impact of the freight rate structure and similar problems. These commodity flow studies would be useful in any regional input-output or inter-industry analysis. It should be emphasized, however, that regional input-output analysis at this time is meaningful only for very large regions, not for small area analysis. For the latter, there remains the challenging task of developing better commodity flow data, and possibly to undertake special studies of industries which are of strategic importance to the area and would lend themselves for later meaningful inclusion in a larger input-output table.

PART II

SOURCES AND PROCEDURES FOR ALLOCATING STATE INCOME PAYMENTS TO COUNTIES[1]

Organization of Sources and Procedures

In the following sections notes on sources and procedures are given for deriving county distributions of each component of income for which separate state estimates were available. The procedures summarized here are those followed in general by the conferees. Where better or more specific county data were available, or where those recommended for general use were lacking or defective, the bureaus deviated from the outline. Minor deviations are not noted, but major ones that were called to our attention are summarized under the name of the state at the end of the notes for each component. Therefore, the variations and the special cases cited are not complete, but they are examples of sources and methods which might be fruitful for others interested in estimating income in small areas.

Note on Industrial Classification

The detail and classification of state estimates followed in this outline are those used by the National Income Unit in the state series at present. The new revised series will provide additional detail. The industrial classification used for the income estimates differs in several respects from the Standard Industrial Classification of 1942, the Social Security Classification of 1942, the Bureau of Internal Revenue Classification of 1942, and the codes used in various states. For a comparison of the first four codes, see National Income and Product of the U. S., 1929-1950, p. 61. In using UC, OASI, and other statistics, the researcher must check industry coverage and classification.

Notes on National Estimates

Special attention is called to the notes on sources and methods used in the derivation of national income statistics prepared by the National Income Division, Office of Business Economics, U. S. Department of Commerce, in National Income and Product of the United States: 1929-1950 (1951 National Income Supplement to the Survey of Current Business, Washington, 1951). Likewise, the researchers will note the special explanations and descriptions applying to the various series of county data referred to below.

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1. See Part I and the Appendix for fuller discussions of concepts, sources, and technical problems.

I. WAGES AND SALARIES

Notes on Department of Commerce State Estimates

Wages and salaries, which for the nation are two-thirds of all income, are among the types of income for which data are most complete and reliable in the preparation of state estimates. They are estimated by states in considerable industrial detail. For most industries they are derived from reports of the Bureau of the Census, the Bureau of Employment Security of the Department of Labor, and the Bureau of Old-Age and Survivors Insurance of the Social Security Administration. In the preparation of state estimates for 1939 and subsequent years, heavy reliance was placed on wage data compiled by the Bureau of Employment Security from tabulations by the state unemployment insurance agencies of reports received from all covered employers. For each state these tabulations include a summary of the total amount of wages (classified by detailed industry groups) actually paid out by establishments located in the state.

The unemployment insurance wage data for states were supplemented by special tabulations of the Bureau of Old-Age and Survivors Insurance furnishing state data on wages in the very small-sized firms excluded from unemployment insurance coverage by the varying size-of-firm provisions of the state laws. These tabulations were compiled from wage data filed by employers under the old-age and survivors insurance program, which includes all-sized establishments within covered employment. Supplementation of the unemployment insurance wage data by the old-age and survivors insurance wage data yields a complete measure of wages and salaries paid out by all establishments in covered industries. On a nation-wide basis, wages and salaries in covered industries in 1949 constituted three-fourths of all wages and salaries and one-half of all income payments to individuals.

State estimates of wages and salaries are prepared for each of the several industries, or types of employment, not covered by social security laws. These include agriculture; federal, state, and local government agencies; railroads; domestic service; and nonprofit religious, charitable, scientific, and educational agencies. Data used in the formulation of estimates for these categories are obtained, for the most part, from federal agencies. For example, estimates of wages paid to hired farm laborers are secured from the Bureau of Agricultural Economics of the Department of Agriculture. Estimates of wages in the railroad industry were derived from data obtained from the Bureau of Employment Security (unemployment insurance data for 1938), the Interstate Commerce Commission, and the Association of American Railroads. Estimates of wage-and-salary payments by governmental agencies are based on data supplied by the Civil Service Commission, Bureau of Labor Statistics of the Department of Labor, Bureau of the Census, Office of Education of the Federal Security Agency, and the Departments of the Army, Navy, and Air Force.

State estimates of government wages and salaries are made separately for the executive, judicial, legislative, and military branches of the federal government, and for the school and nonschool groups of employees of state and local governments. Pay of the armed forces, net of their contributions to allowances and allotments going to their dependents, is allocated by states in terms of their state of duty. This allocation is made separately for each of the four military services and is based on monthly or quarterly data by states on numbers of officers and of enlisted personnel stationed in each state and on average rates of pay for the two groups of personnel.

I-1. Agriculture, Forestry, and Fisheries

a. Farms - Wages of Hired Workers

1939 Estimate

Cash wages paid for hired labor, 1939, from Census of Agriculture: 1945, Volume I, part or bulletin for each state, County Table I, Part 2, Line 52, Column 2, for each county. Note that the census figures do not include income in kind, which is included in the Department of Commerce estimates.

Related county data: number of persons employed in farm labor, 1940, Sixteenth Census of the United States: 1940, Population, Volume or Series II, Tables 18 and 23. This is the source of all 1940 county employment data referred to below.

1947 Estimate

Cash wages paid for hired labor, 1944, from Census of Agriculture: 1945, Volume I, County Table I, Part 2, Line 52, Column 1, for each county. Compare with 1949 data noted below.

Look for changes and shifts from 1944-47. Also note any radical differences between 1939-44 for possible errors. A source for comparison is county data on number of persons employed on farms, a seasonal figure, Census of Agriculture: 1945, County Table I, Part 2.

1949-50 Estimates

Wages paid hired farm labor, 1949, from Census of Agriculture: 1950. (County estimates for all farms based on 20 per cent sample of farms.)

I-1. Agriculture, Forestry, and Fisheries, Contd.

Related county data: number of hired farm workers, March 1950, from Census of Agriculture; number of farm laborers (except unpaid) and farm foremen, from Census of Population: 1950, Second Series, reported as of last week before enumeration--hence, seasonal figure.

b. Agricultural and Similar Service Establishments

In the unrevised income payments series, the Department of Commerce did not prepare separate estimates for several industry groups such as agricultural services, forestry, fisheries, etc. It is expected that the revision of state estimates based on the personal income series will provide details on these industries. Omission of components of income such as these may not appear significant on the state level, but these activities may be quite important in certain counties. Estimates for these groups may be prepared and subtracted from miscellaneous wages and salaries. Agricultural services include cotton gins and compresses, contract packing, husbandry and horticultural services, etc. Some of the latter are covered by UC-OASI. Payrolls in cotton gins may be estimated on the basis of number of bales of cotton ginned in counties.

c. Forestry

1939-50 Estimates

Employment in forestry (except logging) and fishing, 1940, 1950 (Population, Volume II).

Other county data: volume of timber or lumber cut (from U.S. and state Forest Service reports), and severance tax (miscellaneous). Basic data should reflect payrolls in turpentine production which is a major item in some Mississippi, Alabama, and Georgia counties. Note that logging is included in manufacturing division. Compare Census of Manufactures: 1935, in which woods operations in turpentine and rosin were enumerated. Note possible duplication of these items in various sources, especially UC-OASI.

d. Fisheries

1939-50 Estimates

In states where fishing is important, estimate on basis of employment or value of total catch in coastal counties, from F. F. Johnson, Branch of Commercial Fisheries, Fish and Wildlife Service, Department of Interior

I-1. Agriculture, Forestry, and Fisheries, Contd.

(see Fishing Statistics of the U.S., annual), or other data. The 1939 and 1948 statistics are unpublished; 1949 data are being compiled. Proprietors' income is apparently more important than payrolls in fishing.

c. and d. Combined Allocator

Since these two groups are covered by employment in forestry (except logging) and fishing, 1940, 1950, Population, Volume II, multiply employment in each county by average payroll per employee in some closely allied industry, such as sawmills, lumber, industry group 24, etc., to obtain estimated payrolls for forestry and fishing combined. Sum of county estimates may be subtracted from state total for miscellaneous salaries and wages.

Separate estimates for forestry and fisheries were prepared for Alabama, Mississippi, North Carolina, and Virginia. State and county estimates for the industry were prepared as follows and subtracted from miscellaneous wages and salaries.

Alabama--For 1939, employment in forestry and fisheries, 1940, weighted by average payroll per employee in census-covered nonagricultural industries, 1939. State estimate derived from employment in forestry and fisheries and average wages in sawmills, Census of Manufactures: 1939. For 1947, employment in forestry and fisheries, 1940, weighted by average payrolls in all UC-covered industries, 1947. State estimate derived by adding workers in fisheries, 1947, to workers in industry 286, Census of Manufactures: 1947, and weighting by average payrolls in UC industry 286, 1947.

Mississippi--For 1939, employment in forestry and fisheries, 1940, weighted by average wages in logging camps and logging contractors (not operating sawmills), computed from Census of Manufactures: 1939, Table 8. For 1947, employment in forestry and fisheries, 1940, weighted by average earnings in forestry and fisheries covered by OASI, 1947.

North Carolina--For 1939, employment in forestry and fisheries, 1940, weighted by average payrolls in census-covered industries, 1939. For 1947, a combined state total was first estimated on the basis of employment and average payrolls in sawmills. For forestry, UC-OASI payrolls were supplemented by employment, weighted by average payrolls in covered industries. This amount was subtracted from the combined total, and the residual, assumed to be payrolls in fisheries, was distributed by a combined allocator made up of UC-OASI payrolls and county data on value of catch and number of fishermen, 1945.

I-1. Agriculture, Forestry, and Fisheries, Contd.

Virginia--For 1939, employment in forestry and fisheries, 1940, weighted by average payrolls in census-covered industries. For 1947; employment in forestry and fisheries estimated separately from OASI and fishery statistics and weighted by average wages in UC-covered employment for 1947.

I-2. Mining

1939 Estimate

Salaries and wages in mining, from Census of Mineral Industries: 1939, Volume II, State and County Statistics, Table 3, for each state. Note state totals for specific mining industries in Table 2 of this source.

Estimate undisclosed payrolls (for counties included in "All Other" in above source) on basis of UC payrolls for 1939; or employment in mining, 1940 (Population, Table 23, Volume II), weighted by average payrolls of employees in mining covered by UC, or other census-covered nonagricultural industries, 1939.

For some states, county detail in Census of Minerals, Volume II, Table 3, does not include all types of mining. Petroleum, natural gas, and nonproducing operations may be omitted from Table 3. In order to take account of all mining operations, compare state totals reported in Tables 2 and 3. For obvious differences, see head notes, footnotes, and Appendix A, Volume II, "Number of Mines by Type." Also, compare these county data with data on employment by types of mining shown in Table 23, Population, 1940, and mining data in state reports. Allocate separately each industry group not included in County Table 3, such as petroleum, on the basis of employment data, production reports, etc., for specific mining industry group.

State total payrolls may be obtained from UC state reports for 2- and 3-digit industries, or they may be estimated on the basis of employment, production data, etc. Other sources of data: value and volume of minerals production, from Bureau of Mines or state geological offices; petroleum, coal, and other industry reports, tax reports, and mine inspection reports. When data are combined from various sources, care must be taken to avoid duplication.

I-2. Mining, Contd.

1947 Estimate

Payrolls in mining, by county, UC-OASI, 1947.

In this industry all available county data will probably be needed in order to check and complete county classification in UC and OASI series. In both OASI and UC data, the problem of statewide group requires special handling. Allocate to counties as completely as possible: (a) obtain 2- and 3-digit detail from IBM sheets, where possible; (b) for specific 2- or 3-digit group total, allocate to counties on basis of production data or other county series.

1949-50 Estimates

Taxable payrolls in mining, by county, covered by UC-OASI.

Employment in mining, 1950, from Population, second series, weighted by average earnings covered by UC-OASI, etc.

Alabama--For 1947 estimate, a special hand sort of the UC data was prepared. The operations of each multi-unit and statewide firm were classified by county in which actually located. These were supplemented by payrolls in firms with 0-7 employees covered by OASI.

Kentucky--For 1947, the county distribution was based on 1947-48 OASI data, 1948 UC data, coal production reports from Kentucky Bureau of Mines, Kentucky Oil and Gas Association report on oil production, and Minerals Yearbook, 1947.

Mississippi--For 1947, the state estimate was broken down into its component parts on the basis of state UC payrolls, and each component allocated separately, as follows: industry 131, by number of barrels oil produced; industry 133, by number wells drilled; and industry 140, by UC and OASI data.

Tennessee--See Appendix C. for details.

I-3. Manufacturing

1939 Estimate

Wages paid in manufacturing from Census of Manufactures: 1939, Volume III, Reports for States, Table 2.

I-3. Manufacturing, Contd.

Note that this source gives wages only. Both salaries and wages were published for selected counties in Volume I, Summary Statistics, Table 12, pp. 62 ff. Use these for allocation to major counties separately. Estimate undisclosed payrolls (as shown for undistributed in above source) on basis of: (a) payrolls in manufacturing covered by UC; or (b) employment in manufacturing, as reported for some counties in Census of Manufactures, or use 1940 employment data. (Population, Vol. II) weighted by county average UC manufacturing payrolls, county average of all UC-covered payrolls, or county average payrolls of other census-covered nonagricultural industries, 1939. As to importance of, and suggested corrections for situs problem in vicinity of cities, large plants, and industrial counties see Part I and Appendix B.

Limitations on the Use of Wage Data Alone for Allocation of Wages and Salaries in Manufacturing--Since the county statistics on salaries in manufacturing were not published by the Census of Manufactures in 1939, it may be necessary to allocate both wages and salaries on the basis of published wage data alone. Note the exception that 1939 salaries for major (selected) industrial counties can be obtained from Census of Manufactures: 1939, Vol. I Chap. II, Table 12, pp. 62 ff. Major counties may be handled separately to reduce the range of error. The use of wages alone as an allocator will introduce some error into the distribution due to the rather wide variation in the ratio of salaries to wages in counties. In Alabama (for which complete 1939 payroll data are available), the salaries amount to 19 per cent of wages alone. The wage allocator would give correct results only if this ratio were uniform throughout the state. In 7 rural counties the ratio is as low as 5 per cent; if payrolls were allocated to these counties on the basis of wages alone, they would receive 14 to 21 per cent too much. In 13 counties the ratio of salaries to wages ranged above 25 per cent; in these counties the wage allocator would give a payroll figure 8 to 22 per cent too low.

1947 Estimate

Salaries and wages, total of all employees, from Census of Manufactures: 1947, State Reports, Table 2.

Payrolls in manufacturing, by county, UC-OASI, 1947.

Significant manufacturing firms, such as defense plants, or blocks of payroll covered by UC, OASI or other sources, may not be reported in the census. The Department of Commerce state estimates are coordinate with UC-OASI, but before 1949 the Census of Manufactures and OASI were not coordinate. An attempt should be made to account for all payrolls paid in manufacturing by comparison with UC, OASI, and other county data. See state industrial directories for firms operating in counties.

I-3. Manufacturing, Contd.

1949-50 Estimates

Payrolls in manufacturing, by county, UC-OASI (the only OASI data tabulated for counties in 1949-50).

Employment in manufacturing, 1950, from Population, second series, weighted by average earnings. Note that this table covers all persons in the industry.

Beginning with 1949, the OASI classification of manufacturing units will be reconciled with the Census of Manufactures, and OASI tables will be used as benchmark data for estimating purposes. However, the county classification of some of these units will still be open to question. When different series are combined, watch for duplications.

Alabama--For 1939, unpublished county salary data were available from Census of Manufactures for use with wages.

Kentucky--For 1947, an interstate and for 1950 intercounty and interstate situs adjustments were made on the basis of field data. See Appendix B.

Mississippi--For 1939, to adjust for bias in use of wage data alone, census wages in 1939 were adjusted to estimated salaries and wages on basis of ratio of salaries and wages combined to wages only as reported in Census of Manufactures: 1947, Table 2.

Tennessee--For 1939 estimate, to account for both wages and salaries, and to adjust for situs problem, allocation was based on employment in manufacturing, 1940, (adjusted by UC and other sources to reflect 1939 average employment) weighted by 1940 average UC-covered payrolls in manufacturing. For 1947, an allocation (which agreed fairly closely with completed Census of Manufactures: 1947 distribution) was obtained by combining (a) first quarter 1947 OASI wages for 0-7 employee firms extended to full year by ratio of first quarter to full year 1947 UC wages, and (b) 1947 UC wages, both carried out separately for each of the 20 manufacturing industry groups and then totaled. Statewide UC firms were identified and their wages allocated from employment and other data. Also published first quarter OASI wages only were used as allocator for group of 6 scattered counties to avoid disclosure of wages of individual UC-covered firms.

Note on the Situs Problem in Virginia

In Virginia the situs problem was encountered in every city-county situation as well as in numerous other cases where large plants are located near county lines. In so far as could be determined, the problem was of significant importance in the distribution of wages and salaries for six industry groups: (1) manufacturing, (2) construction, (3) trade, (4) services, (5) public utilities, and (6) government. These groups are named in the order of the number of areas in which the problem seemed to exist.

I-3. Manufacturing, Contd.

The procedure for making this adjustment was, in general terms, uniform for all areas and segments of income. (1) Counties and cities were grouped into regions of varying size until the problem seemed to disappear. (2) Allocators were derived for these regions. (3) Allocation within the areas was based for 1939 on resident industry employment from the 1940 Census of Population, Table 23, weighted by county and within industry wage levels, and for 1947, on employment estimates based on extensions of 1940 levels in terms of population change and industry growth, weighted by similar county and within industry wage levels derived from a UC tabulation.

I-4. Contract Construction

1939 Estimate

Wages in construction covered by UC, by counties; or employment in construction, 1940, (Population, Volume II) weighted by average earnings in construction or allied industries.

Other county construction data: state records of contract construction; Dodge reports; state tax reports; and county payroll data in Census of Business: 1935, "Personnel & Payrolls in Industry and Business", Table 2. In using employment data from the Census of Population, special problems will be found in shifts in locus of contract construction. Note that employment data include proprietors and own-account, government and family workers as well as wage and salary workers. (See Population: 1940, third series or Volume III, Table 19, for breakdown of these.)

Suggestions for Use of Special Data on Large Cities: Payroll data for major cities are given in Census of Construction: 1939. These provide a basis for splitting the estimated state total between large cities and rest of state. In making this division, be certain to use comparable statistics for the cities and the state at each step of the operations. The payrolls in the remainder of the state can then be allocated on the basis of county statistics.

1947 Estimate

Payrolls in construction, by county, UC-OASI, 1947.

Certain heavy construction payrolls, such as highways, are not completely allocated to counties. These may be carried in statewide group. Separate estimates may be necessary for these groups.

I-4. Contract Construction, Contd.

1949-50 Estimates

Payrolls in construction, by county, UC-OASI.

Employment in construction, 1950, from Population, second series, weighted by average earnings. (See notes for 1939.)

Note on Non-Comparable Series: Data on construction for different years illustrate the problems that arise due to the use of non-comparable series of statistics. County estimates based on employment data, for example, will be quite different from those based on payroll series which are compiled from establishment or employer reports. Wherever possible, it is suggested that estimates for different years be based on the same type of county data. Where necessary, another series which is available for both years might be used to adjust for known changes between years.

Kentucky--See Appendix D for details.

Mississippi--For 1947, the state estimate was broken into 3 industry groups on basis of OASI payrolls. Payrolls in industries 15 and 17 were then allocated on basis of OASI county payrolls with adjustments based on UC and contractors' sales tax data. Payrolls in industry 16 were distributed by contractors' sales tax data on a where performed basis.

Tennessee--For 1947, basic allocations were made for each of the 3 construction industry groups by counties: (1) first quarter 1947 OASI wages for 0-7 employee firms extended to full year by ratio of first quarter to full year 1947 UC wages, and (2) 1947 annual UC wages for other firms. Major construction projects in general building and heavy construction were identified and used for (dead-reckoning) adjustments in the series. For major dams and other projects, situs adjustment was made by distributing wages among adjacent counties by total population ratios.

I-5. Transportation, Communication, and Public Utilities

a. Railroads (not covered by UC-OASI)

1939 Estimate

Railroad employment, 1940, (Population, Volume II) weighted by average railroad payrolls in 1947 based on data supplied by operators, or other county averages.

I-5. Transportation, Communication, and Public Utilities, Contd.

1947 Estimate

Payroll or employment data for 1947 from railroad operators. These provide complete data for some counties. In counties for which data are incomplete, fill in gaps from 1940 census reports.

1949-50 Estimates

Employment in railroads, 1950, from Population, Second Series, weighted by average earnings. See also, "Number of Employees of Class I Line-Haul Railroads and Switching and Terminal Companies, by States and Metropolitan Areas" (July 15, 1951), from Bureau of Railway Economics, Association of American Railroads, Washington, D. C.

Kentucky--For 1947, payroll and employment data were requested from the railroad operators in the state.

Mississippi--For 1947, distribution was made on basis of 1940 employment, weighted; supplemented by partial 1947 employment and payrolls from operators and state income tax data.

Tennessee--For 1947, the data reported by operators were complete except for one major and several minor roads. Data required adjustment to full year but then accounted for more than two-thirds of total state estimate. Remainder was distributed to appropriate counties by estimated employment as derived by extending 1940 employment for counties by ratios of 1940 to 1947 employment found for counties fully covered in operator data.

b. Water Transportation (not completely covered by UC-OASI)

1939 Estimate

Since employment for this item is included in "other transportation," (Population, 1940, Volume II) wages and salaries, 1939, should be combined with wages and salaries in "street railways" and "motor and other transportation" and allocated as shown in (c) and (d) below. This is a very questionable census category due to the problem of classifying seamen. Therefore, compare several series of data, such as employment and shipping statistics, that might be available.

1947 Estimate

Check to determine coverage by UC-OASI of industry 44, water transportation, (IBM sheets). These data may provide a partial allocator. Compare shipping data and other related series. Compare 1939 and 1947 distributions with location of known facilities.

I-5. Transportation, Communication, and Public Utilities, Contd.

1949-50 Estimates

Employment in water transportation is included in other transportation; see notes on 1939. Compare also UC-OASI data.

Mississippi--For 1947 estimate was allocated on basis of tonnage handled at Gulf and Mississippi ports, Department of the Army, Office of Chief of Engineers, Commercial Statistics, Water-Borne Commerce of the U. S. for the Calendar Year 1947, Annual Report of the Chief of Engineers, 1948, Part 2, Table 6, and "Freight Traffic, Principal Ports on Mississippi River."

c. Street Railway and Bus Lines

d. Motor and Other Transportation

1939 Estimate

Combine state wage and salary totals for (c) street railways and bus lines, and (d) motor and other transportation (water transportation may also be included) and allocate on basis of employment in trucking service and other transportation, 1940 (Population, Volume II, Table 23) weighted by average payrolls in allied industries.

c. Street Railways and Bus Lines

1947 Estimate

Payrolls in industry 41 from IBM sheets, by county, UC-OASI; 1947.

Note: In using OASI or UC data, note that systems operated by city or other government agencies are not covered. These payrolls are included in the appropriate government component. Payrolls for any systems covered by the Railroad Retirement Board should be added to both OASI and UC payrolls to complete coverage.

d. Motor and Other Transportation

1947 Estimate

Payrolls, by county, UC-OASI, 1947, in industry 42: trucking and warehousing for hire; industry 43 (431, 432, 433, 434, 439, 430): other transportation, except water transportation; and industry 45: services allied to transportation, nec.

Combine the estimated components for 1947 and compare with combined distribution for 1939 in transportation.

I-5. Transportation, Communication, and Public Utilities, Contd.

1949-50 Estimates

Payrolls, UC-OASI, as noted for 1947.

Alternative: Combine (b), (c), and (d), as suggested for 1939, and allocate on basis of employment, Population: 1950, in trucking service and warehousing, and other transportation, weighted by average earnings.

e. Power and Gas

1939 Estimate

Employment in utilities, 1940, Population, Volume II, weighted by average payrolls.

Other related data: State utility commission records, and Federal Power Commission, (Directory of Electric and Gas Utilities in the United States, annual) give type, location, number of employees, service area, etc. The Department of Commerce does not include government or city-operated utilities in the estimate of payrolls in power and gas. These are included in the appropriate government component. The researchers should give particular consideration to this in making an estimate based on census employment data, since employment in government-operated utilities is classified under "utilities" in the Census of Population, Volume II, Table 23; but see Volume III, Table 19, Apparently, cooperative distributors are covered by UC-OASI and should be included here. Pay particular attention to large utility payrolls carried in UC and OASI statewide group.

Compare estimates with distribution of public utilities reported in UC tabulations and other records.

1947 Estimate

Payrolls, by county, UC-OASI, 1947, in industry 48, utilities, electric and gas, and industry 49, local utilities and local public services, nec.

Compare 1939, 1947 and 1949-50 estimates for conspicuous deviations.

1949-50 Estimates

Payrolls, UC-OASI, as suggested for 1947.

Employment in utilities and sanitary services, 1950, Population, Second Series. See notes for 1939.

I-5. Transportation, Communication, and Public Utilities, Contd.

f. Communication: Telephone, Telegraph, and Related Services

1939 Estimate

Employment in communication, 1940, Population, Volume II, weighted by average payrolls.

1947 Estimate

Payrolls, by county, UC-OASI, 1947, in industry 46, communication: telephone, telegraph, and related services, and industry 736 (SSB code used by UC-OASI), radio broadcasting and television. Industry 73 (SSB code) is not broken down into 3-digits in OASI tabulations. Use UC data (group 736) for radio and TV stations.

1949-50 Estimates

Employment in telecommunications, 1950, Population, Second Series, weighted by average payrolls.

I-6. Wholesale and Retail Trade

The combined state estimate of wholesale and retail trade payrolls should be allocated together. Prepare combined allocator by (1) adjusting wholesale trade payrolls as noted below; (2) adjusting retail trade payrolls so as to include industry 75, "automobile repair and garages," as noted below; (3) combine the two series for counties; and (4) allocate state total for trade. This obviates the problem of industry group 52, mixed wholesale and retail.

a. Wholesale Trade

1939 Estimate

Payrolls in wholesale trade, from Sixteenth Census of the United States: 1940, Census of Business: 1939, Volume II, Wholesale Trade, Table 13.

Estimate undisclosed census payroll data for counties (withheld from above source) on basis of any available UC payroll data; or employment in wholesale trade, 1940, (Population, Volume II) weighted by average payroll in retail trade, 1939, calculated from Census of Retail Trade (below).

I-6. Wholesale and Retail Trade, Contd.

1947 Estimate

Payrolls in wholesale trade, from Census of Business: 1948, Wholesale Trade.

Estimate undisclosed wholesale census payrolls on basis of UC-OASI payrolls in wholesale trade, 1947. Compare with payrolls, by county, OASI, first quarter 1947, in wholesale trade. There was apparently considerable under-coverage in the Census of Business: 1948.

Distribution based on OASI, first quarter, data might be biased by seasonal factor, and in some states, county grouping makes analysis by county difficult. Calculate seasonal adjustment factor from UC first quarter and annual data. In using UC data, note the limited coverage of small firms.

1949-50 Estimates

Taxable payrolls, UC-OASI. See notes for 1947.

Employment in wholesale trade, 1950, from Population, Second Series, weighted by average earnings.

b. Retail Trade

1939 Estimate

Payrolls in retail trade, from Census of Business: 1939, Volume I, Retail Trade, Part 3, Table 16.

Add to above: payrolls in SSB industry 75, "automobile repair and garages," from "Employment and Wages of Covered Workers in State UC Systems: 1939" (BES, 1941), Table C-49b; or from Census of Service Establishments: 1939, Table 1. Allocate to counties by multiplying 1940 employment in "automobile storage, rental, and repair services," Population, Volume II, by average payrolls in service (Census of Service Establishments, 1939, Table 2, noted below.); adjust to state total which will probably be smaller than aggregate of products.

1947 Estimate

Payrolls in retail trade from Census of Business: 1948, Retail Trade. Add to above payrolls in SSB industry 75, "automobile repair and garages," (OASI adjusted to annual total). Or obtain state total from Census of Business: 1948, Service Trades, and allocate on basis of OASI industry 75.

I-6. Wholesale and Retail Trade, Contd.

Alternative: payrolls, by county, UC-OASI, 1947, in retail trade, plus industry 75, "automobile repair and garages," Limited coverage of UC data might bias distribution based solely on UC payrolls. Obtain small firm payrolls from OASI. Seasonal variation might bias distribution based solely on OASI payrolls. Calculate seasonal adjustment factor from UC first quarter and annual total. Compare distribution of estimates from three sources.

1949-50 Estimates

Taxable payrolls, UC-OASI. See notes for 1947.

Employment in food and dairy products stores, and milk retailing; eating and drinking places; and other retail trade, 1950, from Population, second series, weighted by average earnings.

Kentucky--For 1947, an interstate and for 1950 intercounty and interstate situs adjustments were made on the basis of field data. See Appendix B.

I-7. Finance, Insurance, and Real Estate

1939 Estimate

Employment in finance, insurance, and real estate, 1940 (Population, Volume II), weighted by average payrolls in wholesale and retail trade and service, 1939.

1947 Estimate

Taxable payrolls, UC-OASI, 1947, in finance, insurance, and real estate. Supplement these data with special data on financial establishments not covered by UC-OASI, such as Federal Reserve banks.

1949-50 Estimates

Taxable payrolls, UC-OASI.

Employment in finance, insurance, and real estate, 1950, from Population, second series, weighted by average earnings.

Kentucky--For 1947, an interstate and for 1950 intercounty and interstate situs adjustments were made in the 1947 and 1950 estimates on the basis of sample field data.

I-8. Service

a. Covered Service Industries

1939 Estimate

The population and business census tables do not provide data that coincide with the state estimates for social security covered and noncovered service groups. For example, note that some professional employees in salaried positions in business establishments are covered by UC-OASI, and the Census of Service Establishments includes only part of the industry division. In the absence of adequate UC statistics, the following combined allocator is suggested for covered commercial service payrolls for 1939:

(1) Combine 1940 employment (Population, Volume II, Table 23) in: (a) business and repair services, except automobile; (b) hotels and lodging places; (c) laundering, cleaning, and dyeing services; (d) miscellaneous personal services; (e) amusement, recreation, and related services. (Omit automobile storage, rental and repair services, since these payrolls are included in Department of Commerce retail trade estimate.)

(2) Weight combined number of employees by average earnings in combined (a) wholesale and (b) retail trade, and (c) service establishments. (See Census of Business: 1939, Service Establishments, Table 2, for service.)

(3) Use this aggregate to allocate combined 1939 service payrolls in covered services.

Allocate domestic and other noncovered services separately, as below. Note that the employment data classified by industry in Population, Volume II, Table 23, include proprietors and other own-account workers, unpaid family workers, and some workers on government payrolls. Also, the allocator based on census data would omit some workers whose payrolls are actually covered by UC.

1947 Estimate

Payrolls, by county, OASI, first quarter 1947, in service industries, except the following: industry 75 (from IBM sheets), which is to be included in retail trade, hospitals only in industry 80; radio stations in group 736, and, if included in private education, industry 82.

Payroll data, by county, in service establishments, from Census of Business: 1948, Service Trades. See note below on limited coverage.

I-8. Service, Contd.

If census data are used, the county data on selected service establishments should be combined and supplemented so as to include hotels, tourist camps, places of amusement, and some other categories which are included in the Department of Commerce estimate. Note that only part of these are available from census sources. Combine groups covered by Census of Service Trades with appropriate OASI groups 701, 702, 703, 704, 700, 78, 79, 80 (except hospitals), 81, 82, 83, and 86, from IBM sheets. OASI data must be blown up to annual total. Omit OASI group 75 added to retail trade, and radio stations in group 736.

The special non-covered groups except hospitals dealt with below are nonprofit institutions not subject to UC-OASI. The proprietary firms except hospitals are presumed covered.

1949-50 Estimates

See notes for 1939-47. Compare (1) UC-OASI-covered payrolls with (2) 1950 employment in business services; repair services (nec); hotels and lodging places; personal services, except hotels; entertainment and recreation services; from Population: 1950, Second Series, weighted by average payrolls.

Some employees in medical and other health services, private educational services and other professional services whose payrolls are covered by UC-OASI would be omitted from the census allocator.

Kentucky--An intercounty and an interstate situs adjustment was made in the estimate for 1950 on the basis of sample field data.

Noncovered Services

The service industry groups 80-90 were not completely covered by social security or the census in 1939 and 1948. Payrolls for the following must be dealt with separately, especially in 1947, in order to assure inclusion of all service payrolls.

b. Domestic Service

1939 Estimate

Employment in domestic service, 1940 (use classification by industry group, not by occupation), from Population, Volume II, Table 23, weighted by average payroll in (a) wholesale and (b) retail trade, and (c) service establishments (Census of Business: 1939).

I-8. Service, Contd.

1947 Estimate

Prepare new allocator as follows: (a) Adjust 1940 domestic service employment to 1947 level on basis of 1950/40 population ratio. (b) Weight estimated 1947 employment by average payroll, 1948, in (1) wholesale and (2) retail trade, and (3) service establishments, (Census of Business: 1948) or average OASI-covered payrolls in trade and service.

1949-50 Estimates

Number of private household workers, 1950, from Population, Second Series, classified under major occupation group, weighted by average earnings. Some domestic service workers will be covered by OASI beginning in 1951, but it may be difficult to segregate them for tabulation. The OASI data might provide useful averages for weights.

Alabama--For 1947, the total number of workers in domestic service, 1940, was used to distribute the 1946 estimate of domestic servants made by the state employment security office. Then the resulting distribution was weighted by average earnings in personal business and repair services, 1948, from the 1948 Census of Business. The resulting assumed earnings were used as a direct allocator for the Department of Commerce estimate.

c. Hospitals (private proprietary, corporate, and nonprofit)

1939-50 Estimates

Payrolls in nongovernment hospitals must be estimated separately since OASI taxable payrolls, in industry 80, medical and other health services (from IBM sheets) cover only a portion of this group; namely, the proprietary, partnership, and corporate (profit) hospitals and employees of doctors, etc., and some which volunteer coverage.

The Department of Commerce estimate includes both proprietary, corporate, and nonprofit units, some of which are covered by UC-OASI. Check state and county totals and records to be sure major hospitals are included under the appropriate group and to prevent duplication. Federal, state, county, and city government hospital payrolls are included under the appropriate government category of income estimates.

Suggested Procedures: (1) Classify hospitals and omit government units. (2) Compile payroll data for proprietary, partnership, and corporate units and check with UC-OASI-covered payrolls, industry 80, to prevent duplication with covered services. (3) Compile or estimate payrolls for nonprofit hospitals from UC (industry 806), OASI industry 80, if hospitals can be identified, directories, etc., and combine with payrolls in proprietary and corporate units for county allocator of Department of Commerce estimate.

I-8. Service, Contd.

Payrolls for most proprietary, partnership, corporate, and nonprofit hospitals can be compiled from American Hospital Directory: 1939, 1948 and 1950 (American Hospital Association), or from Hospitals, Journal of the American Hospital Association, June issue, Part II. Some may be compiled from OASI IBM sheets, or from UC reports. Look for state hospital surveys.

Payrolls in non-reporting hospitals can be estimated as follows: (1) Use employment weighted by average UC payrolls; or (2) Multiply average number of patients per day (daily census) by average payroll per patient day by type of institution, and blow up to annual basis by 365. Obtain average census from above source, or Hospital Service in the U. S.: 1948, Journal of the American Medical Association, August 14, 1948, Hospital Number, pp. 1396 ff. or later editions.

Alabama--For 1939, a list was made of the proprietary and nonprofit hospitals in existence in Alabama in 1939. UC payrolls, 1947, for each, plus estimated payrolls for some hospitals not covered by UC were totaled and used as a direct allocator for the 1939 Department of Commerce estimate. For 1947, a list was made of the proprietary and nonprofit hospitals in Alabama in existence in 1947. UC payrolls were used for all covered hospitals. For hospitals not covered by UC, payrolls were estimated by multiplying the average daily census for each noncovered hospital by the average payroll per patient day and adjusting to an annual payroll.

d. Universities (private)

1939-50 Estimates

Payrolls, 1939-40 and 1949-50 for most institutions were reported to the Office of Education but not published.

Payroll statistics were not requested by the Office of Education between 1940-48. Payrolls, 1947-48, can be obtained directly from the institutions or they can be estimated on the basis of total expenditures for educational and general purposes. See Biennial Surveys and unpublished data obtainable from the Office of Education. Note that some private schools are covered by OASI. Researchers should check county UC-OASI detail for industry 82 (especially 822) for possible coverage. For other statistics on these colleges, see Biennial Surveys of Education in the U. S., Statistics of Higher Education, 1939-40 and 1941-42, Volume II, Chap. IV, Tables 18 and 19, and same for later years. Note additional colleges not reporting to Office of Education.

For 1950, the Census of Population proposes to classify employees in educational services, private, separately by county. This group will include private elementary and secondary school personnel, the payrolls of which can be combined with private universities for allocation.

I-8. Service, Contd.

e. Elementary and Secondary Education (private)

1939-47 Estimates

Allocate on basis of data on payrolls, budgets, number of teachers, enrollment, etc. with appropriate weights, from nonpublic schools, directories of schools, or other sources. If no direct data are available, allocate on basis of urban population, 1940 and 1950.

Note that public schools are estimated separately. The Office of Education does not compile a census of private institutions. The Department of Commerce estimate of payrolls is based on enrollment in private schools multiplied by the average payroll per pupil in public schools.

In making 1947 estimate for (d) and (e), examine county distribution of OASI group 82, educational institutions and agencies, to eliminate duplications.

1949-50 Estimates

d. and e. Universities, Elementary and Secondary Education (private)

For 1949-50 estimates, combine payrolls in private elementary and secondary schools and universities and allocate on basis of employment in educational services, private, 1950, from Population, second series. Note that the census figure will also include proprietary trade schools, etc. which may be covered by UC-OASI.

Alabama--For 1939 and 1947 estimates, a list was drawn up of the private elementary and secondary schools in Alabama for 1939 and 1947. The number of teachers in each was tabulated in two groups--white and colored. The average salary for public school teachers was calculated from the Alabama Department of Education Annual Reports for 1939 and 1947 for white and colored public school teachers. These averages were applied to the appropriate number of teachers in each group. The resulting assumed earnings for the two groups were added and used as direct allocator for the Department of Commerce estimate.

f. Religious Organizations

1939-50 Estimates

Allocate on basis of payrolls, budgets, membership, number of organizations, etc., compiled from church yearbooks, state organizations, etc., or on basis of population.

I-8. Service, Contd.

Compare statistics on number of members in major groups, 1936 (Census of Religious Bodies, 1936, Volume I, Table 32, first column, county data on major groups). Since the payroll per member is lower in rural areas than in urban, the number of members or employees might be weighted by average county earnings. For 1947 and 1949-50 estimates, adjust membership data to 1950 level on basis of 1950/40 population ratios in counties, or compile recent data from church sources.

I-9. Government

The Department of Commerce estimates of payrolls in government include payments made directly by public owned and operated facilities such as utilities, but exclude payrolls paid out by contractors for work on or operation of these facilities. Distinguish between payrolls of government employees and private contractors.

1939 Estimate

Accumulate actual payroll data from specific bureaus or departments for each governmental division, or estimate each on basis of employment. See notes for 1947. The specific breakdown by division makes it possible to more correctly locate some of the highly specialized personnel and to take account of differentials in earnings. Only postal workers and school teachers and some Department of Agriculture employees are widely distributed.

If specific payroll data are not available for 1939, consider following alternative: (1) Combine total government wages and salaries from (a) federal civil and military and (b) state and local nonschool; omit public education and state university payrolls. Allocate on the basis of employment in government (public school and state college teachers and some public utility employees are not included), 1940 (Population, Volume II, Table 23), weighted by average payroll in census-covered nonagricultural industries and in public schools, 1939. (2) Allocate public education payrolls on basis of combined county and city school payroll data, by counties, 1939, from state sources. (3) Estimate or compile payrolls in state colleges which are not covered above. (4) Note other groups of employees, such as in some public utilities, government institutions, professional employees on government payrolls (shown in Population, Vol. III, Table 19), that are not included in industry group, government, in Population, Vol. II, Table 23.

The above procedure will provide only a rough allocation. Other possible sources of data for 1939 allocators are:

I-9. Government, Contd.

(1) Federal civilian and military payments: Payroll or employment data from federal sources. (Note data listed under 1947 estimate.) Large blocks of military personnel can be identified at known facilities; compare county data in Population, Volume II, Table 23, under government.

(2) State payrolls: 1939 data from state departments, colleges, and other institutions. (Take account of portion of payrolls at state universities from nongovernmental sources.)

(3) County payrolls: Total expenditures for operation, from Census of Governments: 1942, County Finances, Compendium (Bureau of the Census, 1944) Tables 4 and 3; also, same for 1943. Look for state audits.

(4) Municipal payrolls: Census of Governments: 1942. Look for state audits.

1947, 1949-50 Estimates

a. Federal Government Payrolls

(1) Federal Civil Executive (including civilian employees in Army, Navy, and Air Force)

Basic Employment Data:

A. Additional Report of the Joint Committee on Reduction of Nonessential Federal Expenditures, 82nd Congress of the U.S., On Federal Civilian Employment, 1950 (Washington, 1950), by states and counties--the Byrd report.

B. Employed persons classified by class of worker as government workers, 1950, from Population: 1950, Second Series. (Note that all persons on federal, state, and local government payrolls such as public school teachers are included.)

C. "Paid Civilian Employment in the Executive Branch of the Federal Government by Agency and State of Official Duty Station," December 1947, from U. S. Civil Service Commission (March 31, 1948). (Also available for 1939, 1949, etc.)

Suggested Procedures: Allocate Department of Commerce estimate to counties on basis of combined employment in federal agencies located in county. This assumes (a) that employees reside in county of official station, and (b) that same average annual earning prevails throughout state. Adjustments for (a) might be made on local basis. Data on actual agency payrolls from W-2's

I-9. Government, Contd.

might be compiled for 1949 or subsequent years which would obviate errors arising from (b). Notable omissions might be payrolls of temporary or wage and hour employees in some agencies such as post office.

(2) Federal Legislative

Allocate on basis of residence of federal legislative personnel.

(3) Federal Judicial

Allocate to counties in which federal judges and court personnel reside, or to counties in which federal court sits.

(4) Federal Military

Allocate on basis of payroll or number of military personnel stationed at Army, Navy, and Air Force installations in state, 1939 and 1947, from Office of Progress Reports and Statistics, Secretary of Defense; or, from Quarterly Station Strength Reports and The Army Directory, from Office of the Adjutant General.

Alabama--For 1939 and 1947, the number of federal employees in each governmental division was compiled from available sources. The county detail was adjusted to the state estimate prepared by the U. S. Civil Service Commission for the respective bureaus. These employment series were then used as allocators for the state estimates of wages and salaries.

b. State and Local Government Payrolls

(5) School (Public Education) Payrolls--County and Municipal

Allocate on the basis of county salary data or expenditures for instruction and salaries of county superintendents from the state departments of education. Note that "school" payrolls include only public schools below college level. State colleges are included in state government payrolls. Population: 1950, Second Series, will provide county data on the number of employees in educational services, public, which will presumably include state colleges.

(6) State and Local Nonschool

Divide between (a) state, including state colleges and other state institutions, (b) county, and (c) municipal.

I-9. Government, Contd.

(a) State, Including State Universities

Accumulate available data from state finance department, state auditor or from state universities, institutions, bureaus, and departments. Note that state public assistance payments are dealt with under other income. Take account of payrolls at state institutions from nonstate sources.

(b) County and (c) Municipal

Special tabulation of 1947 sample data on county, municipal, and special district finance, from Bureau of the Census, Governments Division, and special data collected by researchers. See published data and explanation of sample in Government Employment (Census of Governments), Volume 8. Same available for other years.

The Census of Governments uses population to blow up the sample to the presumed universe. Reporting city and county units are classified by size, a per capita ratio of payrolls is calculated and this ratio is then applied to the population of all units within the size group. Perhaps another factor, such as operating expenditures, tax collections or levies for county and municipal nonschool general funds might provide an even more constant basis for blowing up the sample. See Census of Governments: 1942. Researchers should look for special reports or state audits of local governments.

Alabama--State Payrolls. Actual payroll data for 1939 and 1947 were secured from the State Personnel Department. County Payrolls for 1939 were based on the following procedure. The counties were arranged in size groups according to 1940 population and specific per capita payroll ratios were calculated for each group, based on 1947 data noted below. The per capita payroll for one month was applied to the population figure and then blown up to annual figures. For 1947 county payrolls, the counties were arranged in size groups according to 1950 population. From a special tabulation from the Bureau of the Census, payroll data from reporting counties for the month of October 1947 were extended to annual figures. For counties not reporting, per capita payroll ratios were used for the corresponding size population group.
Municipal Payrolls. Estimates of municipal payrolls for 1939 were based largely on actual data from city governments for that period. When actual data were not available, the cities were classified according to 1940 population and per capita payroll ratios for the appropriate group were applied to the population. For 1947, reporting cities were classified by size and the per capita payroll ratio was calculated and applied to all units within the size group. No estimating was done for cities over 100,000, since complete data were reported.

I-9. Government, Contd.

Mississippi--County payrolls, 1939 and 1947, were allocated on basis of payroll data from State Department of Audit, fiscal 1940 and 1947. Municipal payrolls, 1939 and 1947, were allocated on basis of operating expenditures collected by Legislative Municipal Affairs Study Committee for fiscal 1948, supplemented by bureau questionnaire on salaries and wages and 1947 census sample.

Virginia--State and city audits were used for distributing county and municipal payrolls, 1939 and 1947.

1949-50 Estimates

Use above sources and procedures for federal payrolls.

Alternative for State and Local Government: Sample data on local government payrolls, October 1949, from Bureau of the Census, Governments Division. See Statistical Abstract of the U. S., 1950, pp. 359-60.

The total number of government employees (persons on government payrolls) will be reported by counties in Census of Population: 1950, Second Series, under class of worker. (Note that industry classification, public administration, will show only the number performing government functions.) Subtract number of federal employees (given in Byrd report) to obtain state and local employees, including school. The latter are classified under industry group educational services, public. School teachers may also be subtracted, and their payrolls dealt with separately.

Alternative for All Government Payrolls: Since all persons on government payrolls will be classified by class of worker under government workers in Population: 1950, Second Series, combine all government wages and salaries and allocate accordingly. However, this procedure will disregard variations in average earnings due to county differentials in employment. Since school teachers are the group with the greatest occupational differential, they may be dealt with separately.

I-10. Miscellaneous Salaries and Wages

1939-50 Estimates

The combined miscellaneous payrolls can be allocated on the basis of aggregate gross salaries and wages in each of the nonagricultural private industries previously estimated.

In the revised series of state estimates now in preparation by the Department of Commerce the items in this group will be assigned to an industry division.

I-11. Payroll Deductions for Social Security Insurance

1939-50 Estimates

Allocate on basis of gross wages and salaries excluding agriculture, domestic service, and other non-covered services (I-8-b, c, d, e, f), since the latter were not covered by social security programs in 1939, 1947, and 1950. Note that social security coverage changed beginning with 1951.

I-12. Net Salaries and Wages

1939-50 Estimates

Sum of gross from above industries, less social security deductions.

II. PROPRIETORS' INCOME: FARM

II-1. Farm Proprietors' Income

Notes on Department of Commerce State Estimates

Proprietors' income may be divided for purposes of this discussion into net income of farm operators and net income of nonfarm proprietors. State estimates of the net income of farm operators are derived by deducting from farmers' gross income during the calendar year their total expenses of production. Gross income includes cash income from marketings of crops and livestock, government payments, the value of products consumed on the farm, and the value (positive or negative) of the change in inventories of crops and livestock. The total of production expenses is a summation of 34 separately estimated items. Data on which the income and expenditures estimates are based are those of the Bureau of Agricultural Economics. The value of change in inventories, it should be noted, is included in farm proprietors' net income because a measure of current income, not net receipts, is desired. Also to be noted is that products consumed on farms are valued at farm prices. For some purposes, particularly those related to welfare comparisons, valuation at retail prices might be preferable.

For a description of the BAE estimates, see The Agricultural Estimating and Reporting Services of the USDA (Miscellaneous Publication 703, USDA, BAE, Dec. 1949); and Income Parity for Agriculture, Part I, Farm Income, Part II, Expenses of Agricultural Production, and Part VI, Net Income and Production Expenses of Farm Operators, by States (USDA, BAE, 1939-1945).

1939-50 Estimates

Farm proprietors' income is an important income component in the majority of the counties in the southeastern states. Therefore, special attention should be devoted to estimating this component. Special problems center around (1) the use of census and noncensus data and (2) dealing with the considerable detailed county farm data that are available. The researchers are encouraged to canvass possibilities for obtaining noncensus county data for their state and for cooperation with agricultural specialists in their state. Researchers should take careful note of the BAE state estimates from which the Department of Commerce statistics are derived. The BAE estimating procedures for expenses referred to above are especially suggestive. The

II-1. Farm Proprietors' Income, Contd.

following alternatives based on variations in the use of detailed county data are suggested.[1]

Alternative I.

A. Allocate the Department of Commerce state estimate of net income of farm proprietors, less government payments to farmers, on the basis of total value of all farm products sold or used by farm households, reported by the Census of Agriculture, less specific expenses listed by the census and others that can be readily estimated.

B. Allocate government crop or commodity payments to farmers on the basis of county payment data from state PMA or other agency; or, combine with state total net income under Step A. Conservation payments must be dealt with separately. For consistency, the list of expenses subtracted each year should be uniform, since the estimates will be compared for trends. See notes for 1949-50. As soon as 1949 county data become available, expand the procedure or interpolate on basis of 1944-49 series. In this procedure, as in the following alternatives, the adjustments made by the Department of Commerce for changes in value of inventories (a) could be treated as a lump sum unless researchers choose (b) to prepare county estimates of each separately on the basis of appropriate crop and market data. By using the BAE state estimates of crops and commodities cited below, the appropriate adjustment can be made for each item before adding for state totals.

For 1939 county allocator: Subtract (1) aggregate of 1939 expenditures for wages, feed, implements and machinery, gasoline, etc., building materials, fertilizer, lime (Census of Agriculture: 1940, Second Series, County Table X), real estate (property) taxes (two figures given in 1940 County Table VIII), and value of livestock purchased, 1939 (1940 County Table XVI) from (2) total value of all farm products sold or used by farm households, 1939 (given in Third Series, 1940 County Table XVII). Specific references are given below under Alternatives II and III.

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1. The bureaus did not experiment with the application of regression or other statistical equations to the estimation of agricultural income. In view of the considerable differentials in income according to types of farms and various other measurable factors, regression technique might offer possibilities for improvement of estimating procedures in this industry. See, for example, the equation used by Byron L. Johnson and Carl G. Nordquist in An Estimate of Personal Income Payments by Colorado County, 1948 (University of Denver, 1951), pp. 22-25.

II-1. Farm Proprietors' Income, Contd.

For 1947 county allocator: Subtract (1) aggregate of 1944 expenditures for wages and feed (Census of Agriculture: 1945, County Table I, Part 2; and Table III) from (2) total value of all farm products sold or used by farm households, 1944 (1945, Table IV).

For 1949-50 county allocator: Check 1950 Census of Agriculture and income data gathered in 1950 Census of Population for possibilities. Note that the value of products consumed by farm household was not obtained in 1950, although there are some data on home consumption by which the BAE estimates of livestock products and crops consumed at home can be allocated. Several new items on facilities, equipment, and expenditures were collected on a sample basis, including expenditures for machine and labor hire, feed, livestock, seeds, fuel, cash rent, and machine repairs. See notes and references below which were based on final county tables.

Alternative II.

A more detailed procedure would involve the following steps:

A. Prepare 1939, 1947 and 1949-50 allocations of gross receipts in each county from (1) crops, (2) livestock, (3) home consumption, and (4) government payments on basis of BAE state estimates.

B. Prepare detailed estimates of expenses for specified year in each county on basis of BAE state estimates. (Can be broken into subgroups.)

C. Subtract sum of expenses from sum of gross receipts for provisional computed-net or semi-net income figure to be used only as allocator.

D. Allocate Department of Commerce state estimates of net income to counties on basis of provisional allocator.

Following are possible bases for steps A and B:

A. BAE estimates of cash receipts for specified year from:

(1) Crops--allocate estimate of cash receipts plus or minus inventory adjustments on basis of combined value of all crops and forest products sold, 1939; 1944 (1945 County Table IV); 1949 (1950 County Table 7).

(2) Livestock--allocate estimate of receipts plus or minus inventory adjustments on basis of value of all livestock and livestock products sold, 1939; 1944 (1945 County Table IV); 1949 (1950 County Table 7).

II-1. Farm Proprietors' Income, Contd.

(3) Home consumption--allocate on basis of farm products used by farm households, 1939; 1944 (1945 County Table IV); 1949 will need to be allocated on the basis of several items in the 1950 Census of Agriculture or on the basis of 1944 data. See farms reporting vegetables harvested for home use (1950 County Table 5, Part 5), weighted by average value in 1944; also data on animals slaughtered on farms (1950 County Table 4). Crop and livestock products can be estimated separately on basis of BAE estimates.

(4) Government payments--allocate on basis of county specific crop or program data from AAA or PMA, or county commodity data to which payment applies. (State BAE estimates of these four items can be supplied by the Department of Commerce.)

B. Some or all of the categories (or a more detailed breakdown of these for which see reference below or Alternative III) included in the BAE state estimates of production expenses of farm operators can be allocated on the basis of the following county census data:

(The titles of the BAE estimates are underlined and followed by the reference to the county census item. The percentages indicate the relative importance of each expense item in the production expenses of the South Central States in 1944.)

1. Feed purchased, 15%: Cost of feed bought, 1939; 1944 (1945 County Table III); 1949 (1950 County Table 3).

2. Livestock purchased, 7%: Value of livestock purchased, 1939 (1940 County Table XVI). For 1947-50, use 1949 census figure (1950 County Table 3) or estimate for 1944 on basis of: (a) county ratio of livestock purchased to the value of livestock and livestock products sold or traded (calculated from 1939 census data, 1940 County Tables XVI and XVII); (b) applied to the value of livestock and livestock products sold or traded, 1944, by counties (1945 County Table IV); (c) adjusted to value of livestock purchased given in Special Report, 1945 Sample Census of Agriculture, Table 22. Do not use BAE estimate, which is only for interstate purchases.

3. Fertilizer and lime, 5%: (16% in South Atlantic States) Expenditures for fertilizer and liming materials in 1939 (1940 County Table X); and county fertilizer sales data for more recent years from state offices, or estimate on basis of acreage in crops on which fertilizer is used. See Agricultural Statistics and fertilizer industry reports for detail.

II-1. Farm Proprietors' Income, Contd.

4. Cost of operating motor vehicles, 8%: Number of trucks, tractors, and automobiles on farms, 1940, 1945 (1945 County Table I, 2); 1950 (1950 County Table 3, expenditures for fuel and repairs.)

5. Miscellaneous current operating expenses, 22%: May be assumed to vary with all other expenses, or with semi-net value of all farm products. (See detail below.)

6. Hired labor, 20%: Cash wages paid hired labor, 1939, 1944 (1945 County Tables I, 2); 1949 (1950 County Table 3).

7. Maintenance or depreciation, 16%: Buildings--value of farm buildings 1940 (1940 County Table I; not reported for 1945 and 1950.) Motor vehicles, machinery and equipment--value of machinery and equipment, 1940, 1945; (1945 County Table I, 1). For 1950 see various items on farm equipment.

8. Taxes, 4%: Farm taxes levied in 1939 (1940 County Table VIII); not reported for 1944 and 1949. Some state finance departments compile this item separately. Or use gross assessed value of farm property on which levy was made, or calculate tax on basis of tax levy and farm values. (See for example tax levies on farm real estate, Table 699, Agricultural Statistics: 1949.)

9. Farm mortgage interest, 3%: Amount of farm mortgage debt in 1940 (1940 County Table VIII; not reported for 1944 and 1950).

State estimates of expenses for 1939 are published in Income Parity for Agriculture, Part VI, Section 1; Net Income and Production Expenses of Farm Operators by States, Calendar Years 1929, 1939-44 (USDA, BAE, October 1945). Estimates for 1947 were supplied by the Department of Commerce. For a description of the BAE estimates, see The Agricultural Estimating and Reporting Services of the USDA (Miscellaneous Publication 703, USDA, BAE, December 1949).

Alternative III.

A longer method involves making separate allocations of BAE state estimates of gross receipts plus or minus inventory adjustments from each of the 30 odd crop and livestock commodities or groups of these on the basis of the same or allied commodity data from the census or state sources. In some cases, this procedure could be improved by building up estimates on the basis of information on production and prices from state crop statisticians.

II-1. Farm Proprietors' Income, Contd.

On the basis of present available data, this procedure apparently would provide for the maximum adjustments in the estimates to take account of (a) shifts in production and (b) the wide variations in receipts and costs relative to type of farming. Furthermore, recent county farm data from reports on cotton ginning, fertilizer sales, and livestock estimates could be used.

Following is a list of the major commodities for which the BAE prepares estimates of cash receipts by states:

Livestock and Livestock Products	Field Crops
Sheep, lambs	Peanuts
Hogs	Cotton lint
Cattle, calves	Cottonseed
Dairy products	Corn
Eggs	Sweet potatoes
Chickens	Potatoes
Turkeys	Hay
Wool	Sugarcane sirup
Others listed	Sorgo sirup
	Oats
Fruits and tree nuts	Cowpeas
	Truck crops (fresh and for processing)
Peaches	Tobacco
Pecans	Soybeans
Strawberries	Wheat
Apples	Lespedeza seed
Others listed	Clover seed
	Oats
Other Products	Hemp
	Pop corn
Forest	Others listed
Greenhouse nursery	

State estimates are published in Cash Receipts from Farming, by States and Commodities, 1924-44 (USDA, BAE, 1946). Data for 1947 are published in Farm Income Situation, June 1949, which see for later data. See also Agricultural Statistics, Crops and Markets and state crop reports.

Separate allocations can also be made for some 31 groups of expense items, including 20 miscellaneous expenses. Estimates for these could also be broken down on the basis of local information. Following are suggested sources for more detailed county data for allocating BAE state estimates of expenses of farm operators to counties. See BAE explanations and methods

II-1. Farm Proprietors' Income, Contd.

in estimating farm production expenses in Income Parity for Agriculture, Parts I and VI, and The Agricultural Estimating and Reporting Services of the USDA (Miscellaneous Publication 703).

BAE Expense Item	County Allocator and Source of County Data
Feed Purchased	Cost of feed bought, 1939; 1944 (1945 County Table III, line 69); 1949 (1950 County Table 3).
Livestock Purchased	1939: Total value of specified livestock purchased, 1939 (1940 County Table XVI). Use Census total instead of BAE estimate which is only for interstate purchases. 1947: Use 1949, or estimate as follows: (a) ratio of total value of specified livestock purchased, 1939 (1940 County Table XVI), to the value of livestock and livestock products sold, 1939 (1940 County Table XVII); (b) applied to value of livestock and livestock products sold, 1944 (1945 County Table IV); (c) adjusted to value of purchases, 1944, estimated from Special Report, 1945 Sample Census of Agriculture, Table 22. Do not use BAE estimate. 1949: Livestock and poultry purchased, 1949 (1950 County Table 3).
Fertilizer and Lime (combined allocator).	1939: Expenditures for commercial fertilizer, and expenditures for liming materials, lime, etc., 1939 (1940 County Table X). 1947) More recent data may be obtained from fertilizer reports 1949) available for counties in Alabama, Mississippi, Kentucky, Tennessee, from fertilizer control office, Department of Agriculture for each state. Take into account the county difference in grades and values, if possible.

II-1. Farm Proprietors' Income, Contd.

Could also be estimated on basis of crop acreage on which fertilizer is used, weighted by fertilizer application ratios. See fertilizer industry data, and Agricultural Statistics.

Cost of Operating Motor Vehicles and Cost of Operating Gasoline and Steam Engines (classified under Miscellaneous Current Operating Expenses)

1939: Expenditures for gasoline, distillate, kerosene, and oil, 1939 (1940 County Table X).

1947: Use 1949 data or the three following items may be added for an allocator: motor trucks on farms, tractors on farms, and automobiles on farms, 1944 (1945 County Table I, Part 2).

1949: Expenditures for (1) gasoline and other petroleum fuel and oil, (2) tractor repairs, and (3) other farm machinery repairs (1950 County Table 3).

Miscellaneous Current Operating Expenses

Blacksmithing and hardware supplies.
Containers (note crops for which used)
Crop insurance (note crops insured)
Insecticides (note crops)
Irrigation (none in Southeast)
Seeds, including nursery stock (could be estimated in detail on basis of acreage in crops; see also 1950 County Table 3).
Tolls for sugarcane sirup and sorgo sirup
Twine (note crops)

Total value of specified crops harvested, 1939; 1944 (1945 County Table II, Part 1); 1949 (1950 County Table 7, Part 1); or, see specific crop items to which expenses apply.

Dairy supplies
Veterinary expenses and medicine
Grazing (note specific data in 1949)

Value of dairy products sold, 1939; 1944 (1945 County Table IV); 1949 (1950 County Table 4, Part 1).

II-1. Farm Proprietors' Income, Contd.

Electricity

Electricity, farms reporting, 1940; 1945 (1945 County Table I, Part 2); 1950 (1950 County Table 3).

Fire, windstorm, and hail insurance

Value of farm buildings, 1940 (1945 County Table I, First Series). Not reported for 1944 and 1949.

Ginning

1939: Cotton harvested, bales (1945, County Table II, Part 2).

1947: Number of equivalent 500 pound bales ginned, 1947 ("Cotton Production in the United States, Crop of 1948," Bureau of Census, 1949, Table 6).

1949: Cotton harvested, bales (1950 County Table 5).

Greenhouse and nursery supplies

Value of all horticultural specialities sold, 1939; 1944 (1945 County Table II, Part 3); 1949 (1950 County Table 5).

Horses and mules purchased--from outside state (combined allocator)

All mules and mule colts, value, 1939; 1944 (1945 County Table III); 1949 (1950 County Table 4).

All horses and colts, including ponies, 1939; 1944 (1945 County Table III); 1949 (1950 County Table 4).

Net rent to landlords not living on farms

Value of farm land and buildings operated by all tenants, plus value of portion of farms operated by part-owners that is rented from others, 1940 (1940 County Table II); 1944 (1945 County Table V, Part 1.); for 1949, see acres in farms operated by all tenants (1950 County Table 2), weighted by average value per acre in 1945.

II-1. Farm Proprietors' Income, Contd.

Short-term interest to banks and federal agencies, and short-term interest to non-institutional lenders

Value of all farm products sold, 1939; 1944 (1945 County Table IV); 1949 (1950 County Table 7).

Hired labor

Cash wages paid for hired labor, 1939; 1944 (1945 County Table I, Part 2); 1949 (1950 County Table 3). This item has been allocated previously under I-1, Wages and Salaries in Agriculture.

Maintenance and Depreciation of Buildings

Value of farm buildings, 1940 (1940 County Table I). Not given for 1945 and 1950. This ratio has been calculated previously under Miscellaneous Current Operating Expenses--Fire, Windstorm, and hail insurance, 1939.

Maintenance of Motor Vehicles (combined allocator)

Motor trucks on farms, tractors on farms, automobiles on farms, 1939; 1944 (1945 County Table I, Part 2). 1944 data used above.

For 1949, see expenditures for repairs on farm machinery (1950 County Table 3).

Depreciation of Machinery and Equipment

Value of implements and machinery, 1940; 1945 (1945 County Table I, Part 1); for 1949, see various figures on farm equipment.

Taxes (combined allocator)

Amount of real estate taxes from farms operated by full owners, and amount of real estate taxes from farms operated by part owners, 1939 (1940 County Table VIII). Not reported for 1944 and 1949; use state tax data.

Farm Mortgage Interest (combined allocator)

Amount of mortgage for farms operated by full owners, and amount of mortgage for farms operated by part owners, 1940 (1940 County Table VIII). Not reported for 1944 and 1949.

II-1. Farm Proprietors' Income, Contd.

The bureaus cooperating in the Conference used various combinations of the county data.

Alabama--for 1939 allocator, total value of all farm products sold or used, less expenditures for labor and feed, 1939. For 1947 allocator, same items for 1944 were used.

Kentucky, Mississippi, North Carolina and Tennessee--The long method (Alternative III) was used with some combinations of items where the character of data warranted.

Virginia--For 1939 allocator, total value of all farm products sold or used less expenditures for labor, feed and fertilizer in 1939. For 1947 allocator, total value of all farm products sold or used less expenditures for labor and feed in 1944.

II. PROPRIETORS' INCOME: NONFARM

Notes on Department of Commerce State Estimates

The total net income of proprietors in nonagricultural industries is estimated by states for each major industry division. The general procedure is to prepare state distributions, or allocations, of national totals of nonfarm proprietors' income separately for each industry. The distributions are based mainly, for benchmark years (1939 or 1940), on reports of the Bureau of the Census, including reports of both the industrial and population censuses. The data useful for estimation furnished in these reports relate to such items as number of proprietors, sales, withdrawals, value added, payrolls, and employment. Pending the availability of more complete information from census enumerations, year-to-year alterations of the state distributions derived for the census years 1939 and 1940 were based for each industry on a relevant measure such as volume of sales or wage-and-salary payments. However, limited use was made of preliminary results of the 1948 Census of Business in preparing the estimates for 1946-49.

The revised series now in preparation incorporates special data and methods not previously used.

The National Income Division's concept of the number of active proprietors corresponds approximately to that followed by the Bureau of the Census in counting proprietors in all its establishment censuses except the Census of Agriculture, and to the category, employers and own-account or self-employed workers in the Census of Population. See National Income and Product of the United States: 1929-50, A Supplement to the Survey of Current Business (U. S. Department of Commerce, 1951) pp. 70 ff.

Briefly, in allocating proprietors' income to states, the Department of Commerce uses the number of proprietors reported by the Censuses of Manufactures and Business for manufactures, trade, and service establishments. The Census of Population data on employers and own-account workers are the basic series for estimates in mining, construction, transportation, finance, and independent workers in service. Small unincorporated manufacturing operators are classified under miscellaneous repair services and hand trades in service industries.

Notes on County Statistics

The number of active proprietors in unincorporated establishments is reported by county in the Census of Business, 1939 and 1948, for wholesale

Notes on County Statistics, Contd.

and retail trade and selected services. This is significant since these groups and the professions include three-fourths of the income of nonfarm proprietors. The Census of Minerals, 1939, also reported the number of proprietors by county, but this statistic was reported only for states and large cities in the Censuses of Construction and Manufactures in 1939. The Census of Business for 1935 gives the most complete county tabulation of proprietors. See Census of Business: 1935, Personnel and Payroll in Industry and Business, and Farm Personnel, by Counties, Tables 1 and 2.

For some professional groups, such as dentists, doctors, and lawyers, the county distribution of own-account professional workers should be readily available from professional associations or official registers. In some industries, such as manufactures, construction, and finance, it may be necessary to use the number of establishments, firms or OASI reporting units, preferably the small ones since large ones are presumably incorporated. In the case of truck and taxi transportation, it may be necessary to resort to even more indirect indicators such as the number of commercial vehicles registered for hire. Note that a large portion of construction workers are self-employed, and their income is included in proprietors' income.

The county statistics on the number of employers and own-account workers in 1940 are given under class of worker (Population: 1940, Volume II, Table 23; state total in Volume II, Table 16, and Volume III, Table 19, by sex and industry). For 1950, this class of worker category is designated as self-employed workers (Population: 1950, Volume II, Chap. B, Table P-26). This category includes persons operating their own business enterprises such as owner-operators of stores and manufacturing establishments, independent craftsmen, farmers, and professional men. Since this figure includes farmers, the number of farmers and farm managers (given under major occupation group) may be subtracted to obtain the number of nonfarm employers and own-account workers.

This remainder yields the most complete series obtainable on nonfarm proprietors and own-account workers by county. Wherever an aggregate county figure is desired on proprietary income from all nonfarm sources, this series provides the most accurate basis for allocation. It is suggested that a county allocation of all nonfarm income in 1939 be prepared on the basis of this series (weighted by all census-covered earnings) to be used as a check on the sum of separate industry estimates for that year.

Researchers should compare the state totals for this series by industry in Population, Volume III, Table 19 (male and female), with the corresponding statistics on the number of proprietors reported in the

Notes on County Statistics, Contd.

Censuses of Business, Manufactures, Minerals, and Construction in 1939. (Pick up some in 1948 Census of Business. See also county totals in Census of Business: 1935, Personnel and Payroll in Industry and Business, Table 2.) In trade, the two series correspond, but in manufacturing, construction, and some service industries there are large numbers of nonproprietary own-account workers such as independent craftsmen, professional workers, domestics, and operators of small establishments not covered by the census. (See notes on Virginia below.)

The Census of Population, 1940 and 1950, also presents a county tabulation of proprietors, managers, and officials, except farm (Population: 1940, Volume II, Tables 18 and 23; 1950, Volume II, Chap. B, Table P-27, under major occupation group), which might be useful for comparison on the county level. Note, however, that this series includes managers and officials of corporations and some other groups, and it does not include the numerous non-proprietary own-account workers in some industries who may be classified as professional workers in the occupation table.

In view of the geographic variations in average earnings, it is suggested that wherever the number of recipients is relied on as the basic allocator, the number in each county be weighted with the most appropriate county weight. The situation is further complicated by multiple operations of some businessmen.

Note that the Department of Commerce estimates of nonfarm proprietors' income are for unincorporated activities, including partnerships and own-account workers, and they are for net income, not gross receipts. The net profits of corporate enterprises paid out to individuals as dividends are included under property income. Proprietary operations are quite numerous in most industries, especially in trade and service, but in general they employ only a small portion of the total employees. The employment, payrolls, and receipts of corporate operations comprise the major portion of the total in most industries. Therefore, considerable bias will be introduced into the allocation wherever it must be based on total employment, payrolls, gross or net sales, or even a gross margin of operations of all firms, corporate and noncorporate.

Data Needed to Improve Estimates

1. More refined statistics on the number of proprietors and own-account workers in additional industries such as mining, manufacturing,

construction, transportation, and some service industries, possibly from the censuses or from association registers.

2. Special tabulations of net receipts and major expenses of noncorporate operations, possibly from tax returns.

3. Statistics on average net earnings, by county and industry, possibly from tax returns, special surveys, or trade or professional association.

County Distribution of Proprietors and Self-employed Persons in Virginia

By means of census data, state license data, and professional listings, 186,377 of the 201,722 proprietors and self-employed persons listed in the Census of Population: 1940, Volume III, Table 19, were distributed directly to counties in Virginia. Approximately 5,500 other construction workers were distributed in proportion to resident construction workers. About 4,300 non-distributed manufacturing employers were distributed to counties and cities (other than Richmond and Norfolk) by employment in the sub-industry divisions in which they were distributed in Table 19 mentioned above. About 4,000 listed under domestic service were distributed in proportion to total employment in domestic service. Slightly more than 300 in water transportation were distributed among the counties affected on a population basis; about 800 miscellaneous employers were distributed on the basis of the number of workers listed under industry not reported. Some 800 in forestry were distributed on the basis of employment in forestry and fishing less employment in fishing as determined from state license and federal fishery reports. This county distribution of employers and self-employed, by industry, was used as the basis for the allocation of all proprietors' income. The numbers were weighted for 1939 by average area wage levels in census covered industries. For 1947, the numbers of proprietors were adjusted in relation to population and industry employment change, and weighted by area wage levels from full year UC tabulations.

II-2. Proprietors' Income in Mining

1939 Estimate

Number of proprietors (Census of Minerals: 1939, Volume II, Table 3, for each state), weighted by average payrolls in census-covered industries, 1939. Distribute proprietors in "all other counties" on basis of number of mines in Volume II, Appendix A.

II-2. Proprietors' Income in Mining, Contd.

Special Data Needed: Tabulation from the Census of Minerals covering the value of mineral production in unincorporated firms and their production expenses. This would give the most direct means of allocating to counties the state estimates of the earnings of proprietors in unincorporated firms.

1947, 1949-50 Estimates

Number of proprietors in 1939 (Census of Minerals: 1939, Volume II, Table 3), or number of OASI reporting units with 0-19 employees, 1947, weighted by average OASI payrolls in mining. The number of small units is suggested since it is presumed that most large ones are incorporated. Look for the value of production by noncorporate firms.

Kentucky-- The number of OASI units was used as basic allocator in 1947 and the number of UC units was the basic series for 1950. The value of coal production of noncorporate mining firms was used to break down OASI county groups in 1947 and to check the estimates in both years.

II-3. Proprietors' Income in Manufacturing

1939-50 Estimates

Number of establishments (preferably those with 0-19 employees), from Census of Manufactures, 1939, 1947, state reports, or number of OASI reporting units with 0-19 employees, weighted by average earnings in census- or UC-OASI- covered industries.

Some adjustments of errors due to the differential distribution in the number of plants and proprietors can be made for 1939 by using the number of proprietors in cities of 100,000 and over given in Census of Manufactures: 1939, Volume III, Table 9, for each state. (1) From (a) total number of proprietors in state (Table 1), subtract (b) sum of proprietors in cities (Table 9), for (c) number of proprietors in remainder of state. (See also number of proprietors by industry in Table 8.) (2) Allocate total proprietors' income to cities and remainder of state on basis of weighted numbers (b) and (c). (3) After subtracting the number of establishments reported for cities in Table 9 from the respective counties

II-3. Proprietors' Income in Manufacturing, Contd.

in which cities are located, allocate the income in remainder of state to counties on basis of the number of establishments, weighted by county average earnings.

The earnings of unincorporated manufacturing enterprises not covered by the Census of Manufactures (prior to 1947 those with products of less than $5,000) are included in the service industries. In the Southeast a large portion of these are sawmills. Data on the latter, classified by size, are published in U. S. Forest Service reports.

Needed Data: Number of proprietors and the value added by manufacture less payrolls in their plants from Census of Manufactures.

Alabama-- For 1939. Unpublished county data on the number of proprietors were used for 1939, from Census of Manufactures.

Kentucky-- For 1950. State income tax data from special tabulation were used.

Mississippi--For 1947, the allocation was made part by 1948 income of state personal income taxpayers, and balance by number of establishments with 0-19 employees, Census of Manufactures, adjusted for income taxpayers and weighted by average OASI wage.

II-4. Proprietors' Income in Contract Construction

1939 Estimate

The Census of Construction: 1939, did not report proprietors by counties. The number in states and cities of 100,000 and over are given in Table 1. First, allocate proprietors' income to (a) these cities and to (b) the remainder of the state on the basis of the number of proprietors. The allocation to the counties can then be made on the basis of (1) employment in construction, 1940 (subtract number in cities from respective counties), or (2) the number of 1947 OASI units in construction with 0-19 employees.

In addition to the proprietors of establishments, there is a large number of own-account workers in the construction industry. (See Population: 1940, Volume III, Table 19.) The National Income Division assumes that persons employed in the industry not on the payrolls of contractors are proprietors or own-account workers. If it is assumed

II-4. Proprietors' Income in Contract Construction, Contd.

that significant numbers of these independent workers reside in the same areas as wage and salary employees of contractors, then the allocation of proprietors' income might be made on the same basis as wages and salaries.

1947, 1949-50 Estimates

Number of OASI reporting units, 1947, with 0-19 employees, weighted by average earnings in all OASI covered industries.

Number of employees in construction, Population: 1950, Volume II, Chapter B, Table P-30.

Other related data: (1) Some states might find basic data in state tax records, such as sales tax collections on construction materials or value of contract work performed; (2) also look for number of contractors registered in state, trade association lists, etc.; (3) note retail sales in lumber, building and hardware stores, in Census of Business.

Alabama--For 1939 and 1948, state estimate allocated on basis of average of two distributions: (1) retail sales of lumber, building and hardware stores (Census of Business, 1939 and 1948, Retail Sales); and (2) wages and salaries in construction, 1939 and 1947.

Kentucky--For 1950, state income tax data were used.

Mississippi--For 1939, average of two allocations was used, based on (1) wages and salaries in construction and (2) taxable sales of contractors and building supplies, from State Tax Commission. For 1947, average of two allocations was used, (1) part by 1948 income of state personal income tax payers and balance by OASI units with 0-19 employees adjusted for income taxpayers and weighted by average OASI wage; and (2) taxable sales of contractors and building supplies, from State Tax Commission.

North Carolina--For 1939 and 1947, one-half of state total allocated on wages and salaries in respective year, and one-half retail sales in lumber and building material stores, 1939 and 1947.

II-5. Proprietors' Income in Transportation, Communication, and Public Utilities

1939-50 Estimates

a. Water

Allocate to counties in which water transportation activities are known to be conducted, on basis of number of firms or on basis of number of OASI reporting units in industry 44, water transportation.

II-5. Proprietors' Income in Transportation, Communication, and Public Utilities, Contd.

b. Other Transportation

The major portion (about 95 per cent for the United States) of proprietors' income from transportation is derived from taxicabs (18 per cent) and highway freight transportation (77 per cent). (See Population: 1940, Volume III, Table 19.) This suggests using the number of male employees in trucking service (Population: 1940, Volume II, Table 23; 1950, Volume II, Table P-30) as a county allocator.

The most direct allocator would be statistics closely allied to noncorporate cab and truck operations. Researchers should look for special state tax data or other series. Estimate should also include contract school buses. If no better basis for allocation is found, distribute state total on basis of combined number of motor carriers registered for hire and taxicabs registered in counties. Note also number of units in industry 42, trucking and warehousing for hire, and 433, taxicabs.

Mississippi--1939 and 1947, average of two allocations based on (1) male employees in trucking service, 1940, weighted by average census-covered wages, 1939, and (2) registrations of appropriate vehicles, 1947, from Motor Vehicle Comptroller.

II-6. Proprietors' Income in Wholesale and Retail Trade

1939-50 Estimates

a. Wholesale Trade

Number of proprietors in wholesale trade, 1939, 1948, (Census of Business: 1939 and 1948, Wholesale Trade) weighted by average payroll per employee in wholesale and retail trade and service for appropriate year.

Other related data for comparison: state tax reports for wholesale and/or retail sales, preferably proprietary operations only. It should be noted that since relatively small numbers of workers are employed in proprietary establishments, these firms are not well covered by the OASI program, and wage and salary employees and payrolls may not be indicative of proprietors' income.

Mississippi--For 1947, allocated (1) part by 1948 income of state personal income taxpayers, and (2) balance by proprietors in wholesale trade, adjusted for income taxpayers and weighted by average OASI wage in trade and service.

II-6. Proprietors' Income in Wholesale and Retail Trade, Contd.

b. Retail Trade

Number of retail proprietors 1939, 1948, from Census of Business: 1939 and 1948, Retail Trade, weighted by average payroll per employee in wholesale and retail trade and service for appropriate year.

Mississippi--For 1947, allocated (1) part by 1948 income of state personal income taxpayers, and (2) balance by retail proprietors, adjusted for income taxpayers and weighted by average OASI wage in trade and service.

II-7. Proprietors' Income in Finance, Insurance, and Real Estate

1939 Estimate

Proprietary earnings in this group consist largely of earnings of insurance and real estate agents. Look for listings or other data on insurance and real estate agents from state offices. If available, weight by average earnings of employees in trade and service. If these data are not available, allocate on basis of number of male persons employed in finance, 1940 (Population, Volume II) weighted by average payrolls in wholesale and retail trade and service for appropriate year. Since proprietary establishments employ relatively small numbers of workers, employment and payroll data may not be indicative of the county distribution of proprietors' income.

1947, 1949-50 Estimates

See 1939 notes above. If number of insurance and real estate agents are not available, prepare allocator on basis of 1940 employment data weighted, or number of OASI units in industry 64, insurance agents, brokers, and service; industry 65, real estate; and industry 66, combination offices; weighted by average payrolls in trade and service for appropriate year.

For 1950, use males employed in finance, 1950 (Population: 1950, Volume II, Table P-30).

Kentucky--For 1950, data from state income tax returns were used.

Mississippi--For 1939 and 1947, average of two allocations was used, (1) total county income from all other sources in respective year, and (2) 1948 income of personal state income taxpayers engaged in insurance and real estate.

II-8. Proprietors' and Professional Income in Service

1939-50 Estimates

a. Service Establishments

Combine Department of Commerce estimates of proprietors' income in personal service, business service, miscellaneous services, and other services. Allocate on basis of number of proprietors from Census of Business, 1939 and 1948, Service Establishments and Service Trades, weighted by average combined payrolls in wholesale and retail trade and service establishments for appropriate year.

Since other services apparently include self-employed engineers, accountants and some other own-account workers such as hand tradesmen and the operators of custom and small manufacturing enterprises, the number of these might be added to service proprietors. (See National Income Supplement to Survey of Current Business, Tables 16 and 27.)

b. Amusements

Number of proprietors in places of amusement, Census of Business: 1948, Service Trades, weighted by average earnings in trade and service for appropriate year. Note also number of OASI units in industry groups 78 and 79 with 0-19 employees.

Mississippi--For 1947, allocated part by 1948 income of state personal income taxpayers and balance by proprietors in places of amusement, adjusted for income taxpayers and weighted by average OASI wages in trade and service.

c. Hotels and Tourist Courts

Number of proprietors in hotels and tourist courts, Census of Business: 1948, Service Trades, weighted by average earnings in trade and service for appropriate year. See also number of OASI units in industry groups 701, 702, 703, 704, and 700 with 0-19 employees; hotel directories; and AAA directories of tourist camps.

Mississippi--For 1939 and 1947, allocated part by 1948 income of state personal income taxpayers, and balance by hotel and tourist court proprietors, adjusted for income taxpayers and weighted by average OASI wages in trade and service.

d. Medical and Other Health Services

Allocate on basis of number of doctors, dentists, veterinarians, registered nurses in private practice, and other professional own-account health workers. Should not include persons in salaried positions. Weight with average earnings in covered industries for appropriate year. Practical nurses are classified under domestic service.

II-8. Proprietors' and Professional Income in Service, Contd.

Number of doctors, by counties, 1940, given in Health Service Areas (Public Health Bulletin 305, FSA, Public Health Service, 1949).

Note proprietary and partnership hospitals not operated by doctors. Number of doctors and dentists, 1950, should be obtainable from American Medical Association and American Dental Association.

Mississippi--For 1947, allocated part by 1948 income of state personal income taxpayers, and balance by doctors and dentists in private practice, adjusted for income taxpayers and weighted by average OASI wages.

e. Legal Services

Allocate on basis of numbers of lawyers, weighted by average earnings in all covered industries for appropriate year. For number of lawyers, by county, see professional roster of state bar association or Martindale-Hubbell, Law Directory, Vol. I.

Mississippi--For 1947, allocated partly by 1948 income of state personal income taxpayers, and partly by number of lawyers, adjusted for income taxpayers and government employees and weighted by average OASI wages.

a through e. Combined Allocator

If separate estimates of income are not available for the service groups, a combined allocator may be used. Compile as complete county series as possible covering the number of proprietors of service establishments and professional own-account workers. Weight each group to correct for the variation in county distribution of kinds of services. This is advisable because of the wide variation in earnings. The number of professional own-account workers should receive heavier weight than proprietary groups to take account of higher average income in the professions.

For weights, the average earnings of each group can be calculated from uniform, consistent data in state income tax reports if available; or for U. S., from data in Statistics of Income (BIR), 1939, Part 1, Table 8; and 1943, Part 1, pages 95-96; see same for later years. Also, note Occupational Outlook Handbook (BLS Bulletin 940, 1948), and Survey of Current Business, August 1949, p. 23; and January 1950, p. 13; and wage and salary data in Population: 1940, Labor Force, Volume III, Table 16.) For example, (a) to take account of these occupational differentials in earnings in 1939 and to reduce the employment figures to an equivalent earning basis, multiply the number of professional self-employed in each county by the following ratios (based on national BIR data for sole proprietors, using proprietors of service establishments as 1.0),

II-8. Proprietors' and Professional Income in Service, Contd.

and (b) then, multiply weighted numbers by county average payrolls for appropriate year to take account of county differentials in earnings.

Type or Group	Annual Earnings	Ratio to Proprietors
Proprietors of Service Establishments	$2,610	1.0
All Professions	4,260	1.6
Physicians	4,770	1.8
Engineers	4,380	1.7
Lawyers	4,140	1.6
Accountants	3,810	1.5
Dentists	3,700	1.4
Other Professions	4,430	1.7

If total professional employment figure (from Census of Population), less teachers, is used, multiply by 1.6 before adding to proprietors in service, hotels and amusements.

III. PROPERTY INCOME

Notes on Department of Commerce Estimates

National estimates of dividends, interest, and net rents and royalties are distributed by states largely on the basis of tabulations by the Bureau of Internal Revenue of the amounts of these items reported by individuals on federal income tax returns. There are, however, several important exceptions to this general procedure. Estimated as separate components are federal interest payments to individuals (for recent years from state data on Series E individuals' bond holdings, furnished by the Treasury Department) and the imputed interest paid to individuals by financial intermediaries (based for life insurance companies on life insurance-in-force statistics published in the Spectator Insurance Yearbook, and for banks on banking payrolls). Agricultural net rents received by farmer landlords are also estimated as a separate component, from data furnished by the Bureau of Agricultural Economics.

III-1. Rents

a. Net Farm Rents to Landlords on Farms

Note that in the present state income payment series net farm rents paid to landlords living off farms (see estimate of this item, listed as an expense deduction under agricultural proprietors' income) are included in combined estimates of nonfarm rents below.

1939 Estimate

Value of farm lands and buildings operated by all tenants, and portion of farms operated by part-owners rented from others, (Census of Agriculture: 1940, Series I, County Table II.) Some error will arise due to absentee ownership.

1947 Estimate

Same for 1945 or 1950 (Census of Agriculture: 1945, County Table V, Part 1).

1949-50 Estimates

Same for 1950 (Census of Agriculture: 1950). Note that "cash rent paid" reported in this census is only part of all rent; the value of land and buildings rented is inclusive figure.

III-I. Rents, Contd.

b. Nonfarm Rents

Note that this component of the state income payment series includes net farm rents paid to landlords living off farms, along with nonfarm residential, commercial and industrial rents and royalties. The only county series directly related to any component of nonfarm rents is the nonfarm residential series noted below, from the Census of Housing. On a state basis this housing series for 1940 is very closely related to the distribution of 1939 retail sales, although nonfarm rents are somewhat concentrated and sales are more widely distributed. That is, in two-thirds of the states the proportion of sales is greater than the percentage of U. S. total aggregate nonfarm residential rent.

This is characteristic of the retail sales series. On both the state and county level, sales are more widely distributed than are (1) Department of Commerce estimated payments from all property income; (2) dividends and interest reported on individual income tax returns; (3) bank deposits as reported by banks or for tax purposes; and (4) they are somewhat more widely dispersed than nonfarm payrolls.

Lacking more direct allocators, it might be assumed that nonfarm rents are distributed in general in the same way as commercial activities. Retail sales are perhaps the best measure of commercial activities, so this suggests using sales as an allocator for nonfarm rents. However, the sales series should probably be combined with the aggregate rent series from the Census of Housing and the two given equal weights.

The use of assessed property valuations in most states is open to serious question because of wide variations among counties in assessment ratios. In some states analyses have been made from which ratios of assessment to true values have been derived. These might be used to derive more accurate county property values, but this adjusted series would still include nonrented property. In some states rural and town property are separately reported.

1939 Estimate

Aggregate monthly gross rent of tenant-occupied nonfarm dwelling units calculated from data in Sixteenth Census of the United States: 1940, Housing, Second Series of Volume II, Tables 14 and 24.

III-1. Rents, Contd.

Multiply (1) average monthly rent of tenant-occupied units by (2) number of all tenant-occupied units; this is only a provisional series representing monthly aggregate gross rent to be used as county allocator for Department of Commerce estimate of nonfarm rents. Consider use of allocator based on average of two distributions based on (1) rent and (2) retail sales. Note also special tabulation of income from rents and royalties from Bureau of Internal Revenue, unpublished 1934 data compiled in connection with tabulation, a portion of which was published in Statistics of Income Supplement (United States Treasury Department, July 1940), Section II, Table 3, noted on page xix.

1947 Estimate

Same for 1950, calculated from Census of Housing: 1950, Volume I, Table H-31; or use same allocator as for 1939, adjusted to 1947 level on basis of ratio of 1950/40 number of households by counties.

1949-50 Estimates

Aggregate monthly gross rent, calculated from Census of Housing: 1950, Volume I, Table H-31.

Kentucky--For 1939, distributed in ratio to tax assessment of real property, from Annual Report: 1939, Kentucky Department of Revenue.

For 1947, distributed in ratio to tax assessment of town lots, adjusted by individual county tax ratios, special tabulations made by Kentucky Department of Revenue to separate town and farm lots by counties, and to provide county tax ratios on town property.

For 1950, based on special tabulation from state income tax returns.

III-2. Dividends and Interest

There are few county statistics bearing directly on the geographic distribution of dividends and interest. The few scattered county statistics, such as the 1934 data noted below, are usually quite incomplete. Researchers should look for county series closely allied with dividend and/or interest payments, such as state tax data on intangibles and/or personal property, taxable income from securities

III-2. Dividends and Interest, Contd.

reported on state income tax returns, etc. Some states might find basic data in state income or property tax tabulations, such as the returns from the Hall Income Tax in Tennessee on income from certain dividend and interest earnings.

Sources of County Data

1. Dividend and interest data tabulated from 1934 individual income tax returns in Statistics on Income Supplement, (United States Treasury Department, July 1940), Section II, Table 3, for comparison and check of basic allocator.

2. Special tabulation of income from dividends and interest, from 1945 federal income tax returns, Bureau of Internal Revenue.

3. Look for county series more closely allied with distribution of stocks and bonds on which interest and dividends are paid, such as "E" bond sales, by county; "E" bond sales for 1944 in County Data Book, Department of Commerce, 1947, Table 3.

1939-50 Estimates

In 1939, the state distribution of dividends and interest reported on federal individual income tax returns was almost directly correlated with the distribution of total bank deposits. (See data in Statistics of Income for 1939, Part 1.) However, New York reported one-third of the nation's deposits and less than one-fourth (23 per cent) of the dividends and interest.

On a county basis it may be expected that bank deposits would be more highly concentrated in some banking centers than are dividends and interest. Likewise, some counties do not have banks, and there is a tendency for depositors to place their accounts in cities larger than their residence. Deposit data usually include out-of-state, corporate, governmental and interbank deposits, which should be excluded for allocation purposes. The most reliable deposit data are those compiled by tax assessors directly from banks and distributed to counties of residence, although these may be biased by devious means to reduce balances at the assessment date.

The county comparisons that are possible indicate that dividends and interest are quite well concentrated, although probably not quite as highly concentrated as crude bank deposits. Retail sales are more widely distributed; that is, rural states and counties have a higher proportion of

III-2. Dividends and Interest, Contd.

sales than dividends and interest. The distribution of property income, especially nonfarm rents and dividends and interest, is closely correlated with nonfarm income such as wages and salaries. The relation is not quite direct, however, since most of the states in the lower income levels report a higher proportion of payrolls than dividends and interest. The use of county intangible property assessment data is open to question because of variations in complete assessment. However, there may be special provisions covering stocks and bonds or bank deposits that would yield reliable data.

In general, it appears that where direct data are not available, the most plausible distribution of dividends and interest can be made on the basis of a combined allocator weighted equally by the following: (1) bank deposits, in the most refined form available; (2) retail sales or retail sales tax collections for most recent year; and (3) combined wages and salaries and nonfarm proprietors' income as previously estimated, or CASI-covered payrolls. If all property income must be allocated together, farm proprietors' income might be added to (3) and a separate allocation based on (4) aggregate gross rent of nonfarm dwellings might be averaged in.

If it is assumed that the most significant portion of dividends and interest is received by the upper income levels, then they may be allocated on the basis of data on upper income brackets, such as are tabulated from state income tax returns. It should be noted, however, that large numbers of persons in the lower brackets receive dividends and interest. (See, for example, Statistics of Income for 1944, Table 8.)

Kentucky--For 1939 and 1947, distributed in ratio to gross evaluation of intangible property for tax purposes, 1939 and 1947, from Annual Reports of the Kentucky Department of Revenue.

Mississippi--For 1939 and 1947, distributed in ratio to total income tax liability on income received in respective year, from State Tax Commission.

North Carolina--For 1939, interest and dividends were combined and distributed in ratio to assessed value of intangible property, 1942, from Biennial Report of the Department of Tax Research, State of North Carolina. For 1947, combined dividends and interest (except other imputed interest) was distributed in ratio to assessed value of intangible property, 1948, Biennial Report of the Department of Tax Research. Other imputed interest was distributed in ratio to bank demand deposits, 1947.

III-2. Dividends and Interest, Contd.

Tennessee--For 1939 and 1947, distributed in ratio to revenue from state tax on dividends and interest (Hall Income Tax) for fiscal years 1940 and 1948 respectively, from Annual Reports of the Comptroller of the Treasury, State of Tennessee.

Virginia--For 1939, distributed in ratio to taxable incomes of $3,000 and over; for 1947, $5,000 and over from State Tax Department.

IV. OTHER INCOME

Notes on Department of Commerce State Estimates

For most of the numerous individual components of the category of other income payments, state and national data represent actual disbursements, as reported by federal agencies. Types of income for which data on disbursements by states are available from official reports include public assistance and other relief, retirement and unemployment insurance benefits under the Social Security and Railroad Retirement and Railroad Unemployment Insurance programs, benefit payments from state cash sickness compensation funds, and veterans' pensions and benefits. For two other items of this category--workmen's compensation and retirement payments by state and local governments--estimates are supplied by the Social Security Administration as a product of its studies of social insurance and related payments. Data on state bonus payments to veterans of World War II were furnished by the individual state governments. State data on veterans' redemptions of terminal-leave bonds were obtained from the Treasury Department.

The Departments of the Army, Navy, and Air Force report disbursements for the country as a whole for mustering-out payments, military allowances, and enlisted men's cash terminal-leave payments. Additionally, they supply requisite data for estimating the amounts of these disbursements received by residents of the various states. Such data include a tabulation by the War Department of the actual amount of family allowance payments received in each state during June 1944 and annual information on military separations by state of residence. In addition, the Office of Selective Service Records made available special tabulations of the number of military personnel according to state of residence.

1939, 1947, and 1949-50 Estimates

IV-1. Public Assistance Payments

Obtain county data on various public assistance payments, 1939, 1947, and 1949-50 from state welfare department. These will provide direct allocator.

The 1939 state estimate for public assistance payments includes (1) aid to old-aged, blind, and children, etc., and (2) payments for public emergency relief work. The reported county statistics for public assistance probably will not include (2), the payments for public work; therefore, subtract (1) public assistance payments from state

IV-1. Public Assistance Payments Contd.

total (see source below); allocate remainder, which may be presumed to be (2) payments for public emergency work on basis of (a) county tabulations of actual payments, from state offices, or (b) number of persons on public emergency work (WPA, NYA, etc.), as reported in the Census of Population: 1940, Volume II, Table 23. Data on public assistance payments to the aged, blind and children (annual state total for 1939 and county distribution for December 1939) were published in Trends in Public Assistance, 1933-1939 (Federal Security Agency, Bureau of Research & Statistics Report No. 8), Table 42.

IV-2. Old-Age and Survivors Insurance Benefits

Allocate 1947 state estimate to counties on basis of amount of total monthly benefits in current payment status as of June 30, 1947, as supplied to the conference by BOASI.

Same data are available for 1948 and subsequent years which may be used as a check on county distribution.

The small payments under OASI (old plan) made in 1939 (not to be confused with state old-age assistance) might be distributed in same ratio as the OASI benefits in June 1947, or, use covered nonagricultural employment in 1939.

IV-3. State Unemployment Insurance Benefits

Obtain unemployment compensation benefit payments, by counties for 1939 and other years from state UC office. These provide direct allocator. Check on whether reported benefits include all payments received by residents of counties.

UC benefit payments, by counties, should be readily available in all states. If the amount of payments is not available, look for number of weeks of unemployment compensated, number of persons receiving payments, number of applications, etc.

An alternative basis for allocating 1939 payments is the number of persons seeking work in 1940. (Population: 1940, Volume II, Table 23, add male and female; subtract number in rural farm population, third section of Table 27, since UC payments were made only to nonagricultural workers; also subtract new workers seeking work shown in Table 23, since these presumably had not accumulated UC credits.)

IV-4. Pensions and Compensation Payments Related to Railroad Payrolls

(a) Railroad Retirement Benefits

(b) Railroad Unemployment Insurance Benefits

(c) Railroad Sickness Benefits

Combine (a), (b), and (c) and allocate on basis of allocator for railroad payrolls.

IV-5. Industrial Pensions

Private industrial pensions do not bulk large in the Southeast, and they are probably paid out by only a few firms in manufacturing, mining (?), and public utilities. Allocate on basis of employment or payrolls in these industry divisions.

IV-6. Workmen's Compensation

County data on actual payments are available in some states. Basic data might be compiled from state records. Or, construct weighted allocator for specific industries from amount of payments, number of days lost, number of cases, etc. in each industry group or division in state; distribute data for each group to counties on basis of employment in specific industries; and combine for county allocator. Note that the state estimates include medical benefits.

IV-7. Pension Payments Related to Government Payrolls

(a) Federal Civil Service Retirement

Allocate to counties on basis of federal civil executive, legislative, and judicial payrolls (omit military).

(b) State and Local Government Retirement

Allocate to counties on basis of actual benefit data or state and local government payrolls of employee groups or departments in which pensions are paid.

IV-8. Military Retirement

No direct county data available. Presumably these payments are concentrated in the vicinity of some military posts, or perhaps they are distributed somewhat in ratio to the number of veterans or inductees, but these data will probably not be available for 1939. It may be assumed that the distribution is related to the number of males 65 years old and over in 1940. (1) Look for number of veterans, inductees, or servicemen, by counties (use old-war only for 1939; both old and new for 1947-50); or (2) compile number of males 65 years old and over, from Population: 1940, Volume II, Tables 7 and 22.

IV-9. Adjusted Service Bonds

These are payments to old-war veterans. There are probably no direct county statistics on actual payments. Distribute on basis of (1) number of old-war veterans or allied series, 1939 and 1947 (try American Legion for statistics on old-war veterans, servicemen, etc.); or (2) number of males 40 years old and over in 1940, from Population:1940, Volume II, Tables 7 and 22.

IV-10. Veterans' Pensions and Compensation

These payments were made to (a) veterans of old-wars in 1939, and (b) to both old- and new-war veterans in 1947, 1949-50.

For 1939 estimate, distribute in same way as suggested for IV-9, Adjusted Service Bonds.

For 1947 and 1949-50 estimates, (a) distribute on basis of combined number of old- and new-war veterans, inductees, servicemen, or number of registrants for draft, or (b) payments may be combined with some of following groups.

IV-11. Veterans' Payments Made through State Offices, 1947, 1949-50

(a) Veterans' Unemployment Allowances

(b) Veterans' Self-Employment Allowances

(c) Veterans' Subsistence Allowances

IV-11. Veterans' Payments Made through State Offices, 1947, 1949-50 Contd.

Obtain county data from state UC office or other agency that disbursed these payments; or, allocate on basis of number of veterans, servicemen, etc. Note that some of these payments may be concentrated in the vicinity of certain institutions or facilities.

IV-12. Payments Related to Veteran Population, 1947, 1949-50

(a) Terminal Leave Cash Payments

These payments varied by length of time in service and rank.

(b) Veterans' Loan Payments and Interest

(c) Mustering-Out Payments

Servicemen with 90 days' service were paid $100. An additional $100 was paid for service overseas.

(d) Military Reserve Payments

Look for number of reserve personnel. Actual number or payments by city should be available.

(e) Family Allowances and Allotments

Look for data on each type of payment; or combine these payments and allocate on basis of most exact county series on veteran population or number of servicemen.

IV-13. AAA Crop Inspection, 1939

Allocate to counties on basis of distribution of government payments in agriculture, or crops under control program.

PART III. APPENDIX: PAPERS ON SPECIAL PROBLEMS

APPENDIX A

PREVIOUS STUDIES OF COUNTY INCOME

Several attempts have been made to develop a basis for calculating the economic status of counties, for estimating the income received in the counties, or for allocating to counties a portion of the estimated income in the state.[1] Widespread use has been made of data on income tax returns, newspaper circulation, bank deposits, and the volume of retail sales in deriving county business indicators.[2] Some use has also been made of residential rent for this purpose.[3]

The earliest attempt to estimate county income was based on a formula derived through statistical analysis. The procedure rested on the fact that several county statistical series are closely correlated with or reflect the geographical distribution of income. One of the first estimates of county economic status was made on this basis by Weaver in 1926.[4] He determined the relationships that exist between income and certain statistical series among the states. This formula was then applied to the same series on a county basis. A modification of this method was used by Bacon

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1. See attached list of studies related to county estimates of income.

2. See, for example, Market Data Handbook of the United States (U. S. Department of Commerce, Domestic Commerce Series No. 30, 1929) and Consumers' Market Data Handbook: 1936 (U. S. Department of Commerce) Market Research Series No. 15.

3. See, for example, P. D. Converse, County Income and Trade Movements in Illinois (Bureau of Economic and Business Research, University of Illinois, 1945); and Lewis C. Copeland, "Working Papers on a Method for Estimating Family Income Levels in Small Areas" (mimeographed, 1946).

4. H. G. Weaver, "The Development of a Basic Purchasing Power Index by Counties," Harvard Business Review, IV (1926), 275-89.

in estimating county income in Michigan.[1] To derive a figure on per capita income, per capita retail sales, wages paid, and the number of income tax returns were worked into a formula.

A similar method was followed in a study of Virginia counties by John L. Lancaster. The formula for deriving per capita income was based on the percentage of the population which is white or urban and rural-nonfarm, which ever is smaller; the average number of persons supported by each worker; and the sum of the weighted percentages of industrial employment classified into 12 industry divisions.[2] This procedure yields a figure on the total income of the county, although with appropriate data presumably it could be applied to any component of income.

Other investigators have approached the problem of estimating county income more directly and have sought to build up an income figure for counties on the basis of income statistics available for the counties, such as state and federal income tax data. The most comprehensive use of income tax data for this purpose was devised for a study of Virginia counties.[3] For this purpose, estimates of total income payments and the distribution of persons receiving income by income class were based on three components. These were, first, reported income of persons receiving $5,000 or more; second, reported incomes of persons receiving less than $5,000; third, income not reported for tax purposes.

Incomes of $5,000 and over were obtained by using the data on taxable income as reported by the State Department of Taxation for the income year 1947. Persons with taxable incomes of $5,000 and over were assumed to have total incomes of $7,500 and over; persons with

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1. Marvin A. Bacon, Income as an Index of the Fiscal Capacity of Michigan Counties (University of Michigan Governmental Studies, 1941).

2. John L. Lancaster, "Per Capita Income of Virginia Counties for 1940," University of Virginia News Letter, Oct. 1, 1945. See also Edna Safley, "An Index of County Per Capita Income for North Carolina" (unpublished M. A. thesis, University of North Carolina, 1949).

3. See Sara K. Gilliam, Distribution of Income in Virginia in 1947; and Lorin Thompson, "Income Payments by Cities and Counties of Virginia, 1947 and 1945" (Bureau of Population and Economic Research, University of Virginia, 1949; 1950). See also Howard Bowen, The Income of the Counties of Iowa (Iowa State Planning Board, mimeographed).

taxable incomes of $3,000 - 4,999 were assumed to have total incomes of $5,000 - 7,499. The amounts of taxable income in these two classes were adjusted upward by the inclusion of $2,500 per return to cover personal exemptions, etc.

The sample of Federal tax returns was used to develop the reported income of persons receiving less than $5,000. A sample of roughly ten per cent of the 1947 returns was taken in the Office of the Collector of Internal Revenue for Virginia. The schedules were coded and subsequently punched and tabulated by the IBM Corporation. The coverage of the sample for each area was obtained by dividing the number of returns by an adjusted estimate of employment for the area. The adjustment was made by subtracting from total employment the number of persons receiving $5,000 or more and certain classes of workers who in general did not file returns. These classes were: farm labor (paid and unpaid), domestic service, certain classes of farm operators, and members of the armed forces. Reported incomes of under $5,000 were computed by dividing the corresponding income in the sample by the percentage coverage of the sample in the area.

The third group - income not reported for tax purposes - was of two types: the income of persons not filing returns, and non-reported income of persons filing returns. The first was estimated by multiplying the number of persons in the employment class by the average annual income for the class. These averages were as follows: farm labor (unpaid), $0, farm labor (hired), $960; domestic service, $800; farm operators (certain classes), $1,000; armed forces, $1,983.

The second class of non-reported income consisted partially of tax-exempt income, such as insurance payments, government payments (the "other income" category of the National Income Division of the Department of Commerce), etc. No attempt was made to distribute this type of income by income groups. However, an attempt was made to allocate non-reported income to the areas of the State. In the absence of any specific information the assumption was made that the "other income" component of total income was distributed on a population base; the remaining undistributed income was allocated on the basis of distributed income.

County income has also been estimated by following the method used in making the state estimates in which a portion of the national total is allocated to the various states. Since 1929 such a procedure has been followed in preparing a National Survey of Buying Power.[1] After apportioning to each state its share of the total national income, the combined state income is then distributed by counties on the basis of a ratio

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1. By or in behalf of the staff of Sales Management, Inc.

calculated from the proportion of income tax return, retail sales, agricultural marketings, etc., that each county has to the total tax returns, sales, etc., of the state.[1] The resulting figure, referred to as Effective Buying Income, is an estimate of the total or disposable income from all sources in the county and is not broken down into the component payments from various sources.

A more refined method was developed by Adamson and used in the studies of income in Alabama.[2] In following this procedure, an estimate was prepared for several components or sources of income, and then these estimates were added into a total for the county.

Reference might also be made to the field survey or census approach. Since the cost of a complete census is prohibitive on a small area basis, this technique is necessarily restricted to a few localities. A sample might be combined with county data from other sources, but even this modification is quite elaborate and expensive. The Minnesota Income Study, sponsored by the Minnesota Resources Commission, is indicative of the possibilities of this sample census approach.[3] This study, begun in 1938, comprised detail tabulations and analyses of information taken from state income tax returns and unemployment commission reports supplemented by a field survey conducted on a sample basis.

Satisfactory methods have not been developed for estimating the county distribution of the income from unincorporated enterprises, professions and self-employment, property, and miscellaneous other sources. There is need for further research to formulate a method for estimating the income from these sources and to develop the procedures for assembling the necessary statistics. This further work in the field will make it possible to round out the overall estimates and to analyze the structure and sources of income of areas that do not coincide with state lines.

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1. A recent explanation of the procedure is as follows: ". . . . In breaking the state income down by counties and cities, percentage figures are used which are based upon known relationships between the county and state (city and state, city and county) including such factors as retail sales, income tax returns, bank debits, population changes, etc." Sales Management, May 10, 1949, p. 28.

2. W. M. Adamson, Income in Counties of Alabama, 1929 and 1935, (Bureau of Business Research, Univ. of Ala., 1939); also "Measurement of Income in Small Geographic Areas," Southern Economic Journal, VIII, (1942) 479-92. See also the studies by Werner Hochwald, "Missouri Income Payments, 1939-1945," and "Arkansas and Missouri Income, Selected Years, 1939-1947" (Research Department, Federal Reserve Bank of St. Louis, 1948 & 1949), and others listed below.

3. Roy G. Blakey, William Weinfield, James E. Dugan, and Alex L. Hart, Analyses of Minnesota Incomes, 1938-1939 (University of Minnesota Press, 1944); and four mimeographed volumes by Minnesota Resources Commission, 1942.

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APPENDIX B

INTERSTATE SITUS ADJUSTMENT IN KENTUCKY

The border problem which involves interstate movements of employees and income is a difficult one in every state when allocations of income within the state to the appropriate county are attempted. The problem, however, may not be troublesome if the cities on both sides of the state line are of comparable size and activity so that the shift in employment and income balance out.

In Kentucky, it seemed necessary to make a detailed study of the interstate movement at various points along the state border, namely at Ashland, Kentucky, and Portsmouth, Ohio; Newport-Covington, Kentucky and Cincinnati, Chio; Louisville, Kentucky and New Albany-Jeffersonville, Indiana; Henderson, Kentucky and Evansville, Indiana; and Paducah, Kentucky. These areas had a sufficient amount of industrial activity to justify the assumption that there would be a significant amount of interstate movement which should be taken into account in making accurate allocations of income to the Kentucky counties involved.

The method used was to select a sample of representative firms in the financial field in each of the cities involved. Lists of the firms were obtained from industrial directories and telephone books, in addition to whatever information that could be obtained from the Chamber of Commerce of each city. The size of the sample was more or less determined by the size of the city, and an attempt was made to cover a reasonable number of firms in every type of financial activity. Firms in each size group were sampled to avoid bias in the largest or smallest firms. Each firm was then written a personal letter requesting information on residence and payrolls of employees. Interstate movement as a percentage of the total income and employment was figured from the data sent in by these sample firms.

The results of this sample of financial institutions indicated that the movements of employees and income at all points along the border, with the exception of the Louisville and Cincinnati metropolitan areas, was rather slight; and there was sufficient reciprocity to allow the exchanges of income to balance out so that no shift of income was necessary. Therefore, the subsequent investigation was confined to the Louisville and Cincinnati metropolitan areas. The Bureau made contact with an appropriate number of employers in public utilities, manufacturing, and trade as well as finance for 1939 and 1947. It was impossible in most cases to obtain any data for 1939. The results of the 1947 data may be summarized as follows:

a. Finance institutions

(1) Louisville - 20 companies sampled.
Cincinnati - 35 companies sampled.

(2) Approximately 30 per cent sample reporting.

(3) Cincinnati - 4.7 per cent of payroll allocated to Kentucky counties and 7.5 per cent of employees allocated to Kentucky counties.

Newport, Covington - 5 per cent of payroll allocated to Ohio. 2.5 per cent of employees allocated to Ohio.

(4) Louisville - 5 per cent of payroll to Indiana, 5 per cent of employees to Indiana.

Jeffersonville, New Albany, Indiana - 20 per cent of payroll allocated to Jefferson County, Kentucky.

b. Public utilities

(1) Louisville - 25 companies sampled.
Cincinnati - 20 companies sampled.

(2) 30 per cent to 40 per cent of sample reporting.

(3) Cincinnati - 7.8 per cent of payroll to Kentucky counties.

Newport, Covington - 26 per cent of payroll allocated to Ohio.

(4) Louisville - 1 per cent of payroll to Indiana.

Jeffersonville, New Albany, Indiana - results indicated no significant movement.

c. Manufacturing

(1) Louisville - 30 companies sampled.
Cincinnati - 34 companies sampled.

(2) 15 per cent to 20 per cent of sample reporting.

(3) Cincinnati - 2.6 per cent of payroll allocated to Kentucky Counties.

Newport, Covington - 10 per cent of payroll allocated to Ohio.

(4) Louisville - 3 per cent of payroll to Indiana.

Jeffersonville, New Albany - no significant change.

d. Trade

(1) Louisville - 25 companies sampled.
Cincinnati - 26 companies sampled.

(2) Insufficiently reported.

(3) Cincinnati - 1 company, 22 per cent of payroll to Kentucky counties, 20 per cent of employees to Kentucky counties.

(4) Louisville - 1 company, 7 per cent of employees to Indiana, 5 per cent of payroll to Indiana.

Applying the percentages under (c) above to the total income data as reported by Census of Manufactures for 1947 for the Cincinnati and Louisville metropolitan areas, the following changes will be noted:

Manufacturing

Total state salaries and wages	$ 304,668,000
Total Cincinnati salaries and wages	357,162,000
Amount earned in Cincinnati by Kentuckians (2.6%)	9,279,068
Amount earned in Kentucky by Ohio residents (10%)	2,577,300
Total Louisville salaries and wages	174,092,000
Amount earned in Louisville by Indiana residents (3.0%)	5,139,195
Amount earned in Indiana by Kentuckians (data indicates amount to be negligible)	?

Net change, addition to Kentucky total - $1,562,573.

One possible solution is to add the $1.5 million to the Kenton and Campbell County totals (Newport and Covington) in an appropriate distribution, compute a revised state total, and figure new allocators on the basis of this revised state total. This will adjust the Newport-Covington area upward and the remaining counties downward in per cent and also in absolute amount when these allocators are applied to the Department of Commerce total. Assuming the remaining counties to be accurately reported, this method will increase Kenton and Campbell at the expense of the other counties. This is not too serious in the case of wages and salaries in manufacturing since the Louisville and Newport-Covington areas account for about 70 per cent of this income in the state, the remainder being localized in nine other counties.

Another solution, and perhaps a preferable one, is to make the adjustments in the Kenton, Campbell, and Jefferson County totals after the allocation of the component has been completed for all the counties. This will result in a net increase in the state total. If the exact adjustment in the totals is carefully footnoted, the reader should be able to separate the net increase in the state totals. This method has the advantage of eliminating any distortion, however, small, in the remaining counties.

APPENDIX C

MINING WAGES AND SALARIES IN TENNESSEE

Summary of Estimates for 1939

Problem

Distribution of wages and salaries grouped under all other for 29 counties; and adjustments for single-county reporting of multiple-county operations and for wage recipients' residence in counties other than counties of their employment.

Data Available

U. S. Census of Mineral Industries: 1939; state total 1939 and state and county totals 1940 UC (ES-203) tabulations by two-digit industry groups; U. S. Census of Population: 1940; wages, employment, production, etc., for mines by counties, Annual Report, Tennessee Department of Labor, Division of Mines; Minerals Yearbook 1940 and 1941; and reports of Tennessee State Planning Commission.

Procedure

Analyses of the relevant data and information obtained led to the conclusion that the most logical procedure for Tennessee was a complete county redistribution by two-digit industry groups of the 1939 Mineral Industries census wages and salaries total on the basis of employment from the 1940 Population census weighted by the 1940 UC annual average wages. More specifically, the procedure was:

1. To segregate all the source data by the four mining industry groups (metal, bituminous coal, non-metallic mining, and petroleum and natural gas production) represented in the state and by counties;

2. To calculate for each of the four industry groups an estimated county series of wages and salaries by weighting (multiplying) each county's employment in the group as reported by the 1940 Population census by the county's average annual wage in the group as derived from the 1940 UC tabulations of employment and wages;

3. To adjust each series, by the ratio of the series' total to the industry group's sub-total, so that its total equalled the group's sub-total of wages and salaries obtained from Table 2 of the Mineral Industries census, and so that the total of the four adjusted series combined by counties equalled the census total for all mining in the state; and, finally

4. To convert the combined estimated county series of all mining into a percentage distribution for use as the allocator to the counties of the Department of Commerce estimate of gross wages and salaries in mining in the state for 1939.

The source data series were not complete, nor were they all fully segregated by industry groups. Therefore, it became necessary to make a number of assumptions, estimates, and improvisions in applying the procedure. State sub-total wages and salaries were reported separately in Table 2 of the Mineral Industries census for three of the industry groups and the total of the remaining values was taken as the sub-total for the non-metallic mining group. The counties included in the mining activity enumerations of the census Appendix A were used to indicate the lists of counties to which each of the industry group sub-totals should be distributed. But for petroleum and natural gas production, not included in Appendix A, the county list was based on information from other sources--principally reports of the Tennessee State Planning Commission. Also, for bituminous coal the census list was extended to include two counties with no mining activity shown in Appendix A but with appreciable employment reported in the Population census and known central offices in one of them.

In the 1940 Population census only coal mining, and petroleum and natural gas production employment data were reported separately. The remaining employment reported in other mines and quarries was segregated by counties between metal and non-metallic mining by the ratios found for the two industry groups in the 1940 UC tabulations of employment. Also, no 1940 UC mining industry data were reported for several counties. For each of these counties the average wage value was assumed to be the same as that found for an adjacent county with comparable composition of mining activity by type of mining, judged largely from the Appendix A enumerations but also from other sources.

Appraisal of Procedure

In comparison with the other possible procedures explored, the procedure used here has the specific merit of consistency in allocating to the counties the undistributed (all other counties) wages and salaries,

including those for petroleum and natural gas production, while at the same time correcting the basic series (Table 3 of the Mineral Industries census) for an unmeasured element of single-county reporting of multiple-county operations and for the other phase of the situs problem, county of employee residence differing from county of employment. Also, the procedure distributes among all the coal mining counties an apparent interstate balance of near $400,000 paid Kentucky residents by mines in one Tennessee (Claiborne) county. Although the wage recipients are nearer this county than others, the salient fact is, to the extent that the balance exists and the amount is correct, that the state total is overstated and the wages should be spread to all coal mining (if not all mining) employees in the state. To leave it in the one county where reported would result in a gross distortion in measurement of the local area's income.

The procedure is a mathematical one which makes a complete redistribution of the data for all mining counties from two independent source series. Both series had to be adjusted or completed before the calculations were made. Also, there are inherent differences between them, and between each and the basic county series reported by the Mineral Industries census. These differences include those of industry classification, extent of coverage, and accuracy of reporting, as well as the major ones which the procedure is designed to identify and correct. Exact county-by-county agreement cannot be expected between the estimated series and the basic series, even after accounting for the adjustments sought. It is sufficient to test the procedure by judging the direction and approximated size of the larger differences in the percentage distributions between the two from production, mine location and activity and related information reported in other sources. By such a test it was concluded that the procedure produces a reasonable percentage allocation of wages and salaries income among the counties.

For a few counties with relatively small wages and salaries values, the application of the procedure did produce large percentage increases or decreases in comparison with the values for the counties reported in the basic series. While adjustments may be indicated, they are of relatively small importance and can be justified only by acceptance of the evidence found in one source as outweighing that in other sources. When so justified, the adjustments may be made arbitrarily in the final estimated series, or preferably in the form of corrections in source series with resulting recalculation of the estimates. No such final adjustments were made here.

Summary of Estimates for 1947

Problem

Distribution of the relatively small undistributed statewide total, and adjustments for conflicting county distributions in basic OASI and UC wage series, and for wage recipients' residence in counties other than counties of employment.

Data Available

First quarter 1947 OASI tabulations, by counties, by two-digit industry groups; 1947 UC tabulations, by counties, by three-digit industry groups; 1948 and 1940 Annual Reports, Tennessee Department of Labor, Division of Mines, data by mines and by counties for years 1947 and 1939 but incomplete except for coal mining; 1948 Minerals Yearbook, preprints; U. S. Census of Population: 1940; Tennessee State Planning Commission, Industrial Resources of Tennessee, 1948 ed., Vol. 2, descriptive-historical materials on mining activities and mineral production; and 1940 UC tabulations, by counties.

Procedure

Analyses of the relevant data and information obtained led to the conclusion that the most logical and only feasible over-all procedure was:

1) To allocate the 1947 state estimate of gross wages and salaries income payments in mining among the four industry groups represented (for use as estimated sub-totals for the groups) by first-quarter OASI wages extended to full year by the 1947 UC ratio of first quarter to full year wages, with calculations by state totals for industry groups and the calculated total of the four groups combined adjusted to equal income estimate for all mining;

2) To allocate and adjust among the counties these estimated sub-totals;

    a) For the metal and non-metallic mining industry groups, by OASI - UC ratio extension calculations, or for certain counties where data were not available from the two basic sources by estimates based on calculations where data did match and other information;

b) For the relatively unimportant (less than one per cent of total) petroleum and natural gas production industry group, arbitrarily by the percentage distribution already developed in the 1939 estimating procedure;

c) For the bituminous coal mining industry group by the rather involved although readily applied formula, as follows with all data for coal mining only and by counties: the ratio of 1940 Population census employment to 1939 Tennessee Division of Mines employment multiplied by the 1947 Tennessee Division of Mines to give estimated employment by county of residence, these estimates than multiplied by the 1947 UC average wages to give an estimated 1947 wage series, and this series adjusted so that its total equalled the industry group estimated sub-total for all mining; and, finally

3) To combine by counties the four estimated wage series, as developed in 2), as the county estimates of gross wages and salaries income payments in mining in the state for 1947.

The UC - OASI ratio extension of the industry group wage totals in the first step yielded an all-mining total which was only 1.2 per cent lower than the Department of Commerce estimate of $32.8 million for the component of wages and salaries income from mining in the state for the year. The OASI and UC all mining and group data were in substantial agreement after allowing for the greater OASI coverage. The following tabulation summarizes the first quarter 1947 data from both sources, the extended group totals as adjusted, and permits comparison of the percentage distributions, by industry groups, between the first quarter and the extended wage values.

Mining Ind. Group	Reported by	1st Qtr. Number Units	1st Qtr. Employment	Wages 1st Qtr. Only Amt. (000)	Wages 1st Qtr. Only P. Ct.	OASI-UC Ratio Extension Amt. (000)	OASI-UC Ratio Extension P. Ct.
10. Metal	OASI	11	1,595	$ 933	11.90	$3,946	12.03
	UC	6	1,353	830	11.13	--	--
12. Bit. Coal	OASI	262	7,881	5,081	64.76	20,343	62.02
	UC	116	7,726	5,000	67.20	--	--
13. Petroleum	OASI	12	29	10	0.12	21	0.06
	UC	2	(Omitted re disclosure)			--	--
14. Non-Metal	OASI	115	3,936	1,822	23.22	8,490	25.89
	UC	93	3,344	1,590	21.30	--	--
All Mining	OASI	400	13,441	$ 7,846	100.00	$32,800	100.00
	UC	217	12,448	7,450	100.00		

It would appear logical to apply the same extension in allocating either the county totals for all mining or the county totals by groups to derive the county estimates. The major difficulty is that of 60 counties with data reported by either OASI or UC, 23 had data reported by OASI but not by UC, and 10 counties had data reported by UC but not by OASI. The accuracy of the UC report is supported by other evidence that mining activity did exist in the 10 counties omitted in the OASI tabulation. Comparisons between the first quarter 1947 OASI and UC wage data by groups and counties, reveals a total of 101 wage entries--wages being reported in some counties for two or three of the groups. In 10 instances the entries had the same values in the OASI and UC reports, in 58 instances the OASI value was larger than the UC value, but in 33 the UC value was the larger. Thus, there appeared to be a major discrepancy between the two series in the reporting by counties.

That the OASI and UC tabulations did not match in the bituminous coal group is quite evident from the following comparison of the first quarter data for 10 adjacent counties. A comparison of the statewide data showed that the differences were not shifted to this item.

County	Reported by	Units	Employment	Wages
Anderson	OASI	12	993	$ 681,524
	UC	7	1,164	799,306
Campbell	OASI	37	1,431	1,027,220
	UC	20	2,006	1,393,571
Claiborne	OASI	8	1,326	906,766
	UC	6	1,519	1,059,577
Knox	OASI	14	1,009	752,282
	UC	4	387	252,627
6 Other Adjacent Counties	OASI	49	904	479,544
	UC	24	923	547,428
Total 10 Counties	OASI	120	5,663	$ 3,844,636
	UC	61	5,999	4,052,509

In only four of the 10 counties, including Knox as shown, did employment and wages as reported by OASI, which has the more extensive coverage, exceed those reported by UC. In the totals for the 10 counties, the UC employment and wage data for almost exactly one-half the number of units exceed those from the OASI tabulation. It can only be concluded that the same units were not assigned to the same counties by both agencies. Coal mining industry data were reported for eight more counties in the OASI than in the UC tabulation, but county-by-county comparisons of each with the Tennessee Division of Mines data on numbers of operators and mines, production and employment indicate that the UC data were more accurately reported by county of mining activity than were the OASI. Also, there is the further possibility that some of the Tennessee coal mining operations may have been assigned to Kentucky central offices in the OASI tables.

Since the OASI and UC data in the coal industry group did not match, and since it was also concluded the central office reporting as for Knox and other counties distorted both series as to county of employee residence, the procedure outlined above seemed the best, if not the only logical one for allocating the estimated sub-total among the counties. The estimated sub-total control amount of $20,343,923 was distributed to 18 counties with coal mining activity reported by the Tennessee Division of Mines plus Knox and Sullivan counties--Knox because of known central offices and Sullivan on the assumption that the OASI data (and therefore the industry group total for the state) was for activity in western Virginia but with Tennessee residents probably receiving a like amount

from their employment across the state line. The effect of the procedure was to spread the wages reported by either OASI or UC as for statewide and other counties among these 20 counties. This is justified by evidence (largely from Tennessee Division of Mines reports) that coal mining activity and practically all wages and salaries were confined to these counties. A third possible procedure of production tonnage weighted by labor costs per ton, each by counties, would produce an adjustment similar to the one obtained by use of the UC average wages in this procedure. It was rejected first because the obtainable unit labor costs were not reliable on the county basis, but primarily because it made no adjustment for the quite evident situs problem.

The UC-OASI ratio extension method was applied in allocating the metal and non-metallic mining groups because comparable county data were not available for developing any other method. For each group, county-by-county examination of all available data was used in adjusting and correcting the basic OASI county series before extension by the UC ratios. Thus, seven such changes were made in the metal mining series with the final allocation made to only nine counties. In the non-metallic mining group, the statewide data, units and employment, as well as extended wages, agreed quite closely with similar data for the year reported for phosphatic rock mining in Giles county by the Tennessee Division of Mines. Although the agreement may be accidental, the total amount of statewide wages was assigned to the county. For the whole group, there were 15 other county adjustments made in the allocation to a total of 54 counties. As an example of the adjustments, a relatively minor one made for White county may be cited. The UC first quarter 1947 tabulation reported the county had 3 units, 71 employees and $21,029 wages for the first quarter 1947 as against 1 unit and only a fraction of UC-covered employment and payrolls reported in the OASI tabulation. Both the Tennessee State Planning Commission and Tennessee Division of Mines reported three operations including a whiting mill in the county. There was no clue as to what county the data for 2 units might have been reported in the OASI tabulations. The UC wage value was substituted in the extension.

Appraisal of Procedure

The procedure, although more complicated than the relative amount of the state total of estimated income payments to be allocated justifies, has the merit of applying the available data and information on a county by industry group basis. The industry group sub-totals of the estimate for the component are used as controls to confine any discrepancies in the county allocations to the industry groups in which they may occur.

APPENDIX D

CONSTRUCTION WAGES AND SALARIES IN KENTUCKY

The allocation of wages and salaries in contract construction is a particularly difficult problem since the normal activity of many contractors involves movements of employees and income over county and even state lines. This is most evident in the heavy construction field, although, to a lesser degree, it may occur in other types of construction. The use of OASI or UC data is often misleading in the heavy construction field since the payrolls and employment are generally reported on a home office basis rather than the location of the construction project. The latter would be a closer approximation to the residence of the employees. In addition, it is necessary to find some reliable method of distributing the state-wide income to the appropriate county.

A special study of heavy construction in Kentucky in 1947 was made, based on the assumption that heavy construction accounted for large amounts of the income which would be badly allocated in most of the series which were available. Five groups in this field were selected for analysis, highway construction, state building construction, university building construction, public elementary and secondary school building construction, and federal construction. These groups cover the bulk of the heavy construction in the state. The following special data were gathered:

1. Highway Construction

From the records of the State Highway Department, it was possible to obtain the total amount expended on highway contracts allocated by counties and the execution and completion dates of the contracts, so that the 1947 expenditures could be segregated from the total amount of the contract.

2. State Building Construction

The total amount of contracts issued for state buildings was obtained from the State Engineering and Maintenance Department. Again, expenditures for 1947 were segregated by the execution and completion dates of the contracts. The location of the project was used to identify the county to which the income was to be allocated.

3. University Building Construction

University building construction was obtained by inquiries sent to twelve of the larger colleges and universities of the state. The data requested were of total amounts of money expended in 1947 for new construction. The location of the project again identified the appropriate county.

4. Public Elementary and Secondary School Building Construction

These data were compiled by the Department of Education, giving total amounts expended in 1947 on contract construction by school districts.

5. Federal Construction (Classification: industry 16)

The Corps of Engineers, United States Army, in the Louisville district compiled data on the amount paid to contractors during 1947 for new federal construction, identifying the county in which the construction was done.

The use of all of these data rested on the assumption that the residence of the employee is in the same county as the construction project. Although this may not always be true, it would seem reasonable to assume that employee residence would correspond more closely with the location of the project than with the reporting office of the contractor.

The state totals for the five groups enumerated above are:

Highway construction	$15,279,811
State building construction	2,534,876
University building construction	1,115,998
Public school building construction	1,864,000
Federal construction	6,121,799
Total	$ 26,916,484

These contract figures were then reduced to represent the labor cost involved. Highway and federal construction data were reduced by 70 per cent, assuming 30 per cent labor cost in highway, dam, etc., construction. The building contract figures were reduced by 55 per cent, assuming 45 per cent labor cost in building construction. These percentages were determined by information received from the University Engineering Department, a building contractor, and a highway contractor. The totals for wages and salaries are then:

Highway construction	$4,583,943
State building construction	1,140,695
University building construction	502,199
Public school building construction	838,800
Federal construction	1,836,540
Total	$ 8,902,177

The UC tabulation for 1948 was selected as the basic series for two reasons; one, the UC state total, $38,223,020, is closer to the Department of Commerce total of $57,000,000 for Kentucky in 1947; and, second, the UC distribution between counties is better, the UC data are reported on a where employed basis more nearly than are OASI, and UC does not use the county groups which, in construction income particularly, adds to the difficulties of using the OASI data. The UC tabulation was then broken down by the three industry groups, 15, 16, and 17. Each industry group was handled separately, in the following manner:

Industry 15

UC distributed total	$8,798,276
UC undistributed	2,528,544
UC total	$ 11,326,820
Total of special data on building construction	$ 2,481,694

Since the undistributed figure and the total for the special data on building construction were so close, the undistributed was allocated to the counties on the basis of the allocation of the special data on building construction. The procedure is based on the assumption that the undistributed is made up of these large building projects. This may not be wholly correct, but it is true that the largest amount of state-wide reporting will be in this group (large public buildings), and, therefore, the labor costs involved in public building contracts are the best available data to distribute the state-wide figure.

Industry 16

UC distributed total	$6,462,964
UC undistributed	4,546,080
UC total	$11,009,044
Total of special data on highway and federal construction	$ 6,420,482

The UC distributed figures for industry 16 were taken as the base; and the county data on highways and federal construction were added to these figures. This absorbed the undistributed and increased the UC total by $1,874,402. The assumption again was that the undistributed UC figure consisted largely of highway and heavy federal construction; these projects would account for the state-wide figure. The UC total was increased on the assumption that it was too low, due to omissions of some heavy construction. The number of contracts or the amount of income omitted is unknown, but because the special data total was $1.8 million more than the undistributed, the UC total was increased by that amount.

Industry 17

UC distributed total	$14,767,452
UC undistributed	1,119,704
UC total	$15,887,156

Because six counties, Lee, Meade, Powell, Todd, Wolfe, and Woodford, had no construction income of any of the three types, $30,000 of the undistributed was arbitrarily lifted from the state-wide figure and distributed to these six counties on the basis of the variations of income which they showed in wages and salaries in covered service industries. The service income of the six counties was taken from the covered service tabulation, and the percentage distribution figured. The portion of the $30,000 which each received was based on this percentage.

This amount, $30,000, was selected arbitrarily, based only on the knowledge that these were poor counties and, therefore, the amount of construction income would be very small. However, some part of the undistributed should be allocated to them from industry 17, since undoubtedly a small amount of special construction work was done. Using service income to distribute the $30,000 to these counties was based on the assumption that the amount of special construction (plumbing, electrical, etc.) would follow closely the distribution of service industries.

The bulk of the undistributed, $1,089,704, was handled as follows: UC county figures for industries 15 and 17 were added. A percentage distribution was then used to allocate the $1.1 million to the counties. Here, the assumption was that the distribution of special construction would follow that of building construction and distributed special construction. Since no supplementary data were available, this seemed to be the best possible way of handling the undistributed for industry 17.

The revised county totals for industries 15, 16, and 17 were then added and a percentage allocator was used to distribute the Department of Commerce total.

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